VOL. 180 No. 5 AMERICAN MAY, 1954

JUL 19 1954

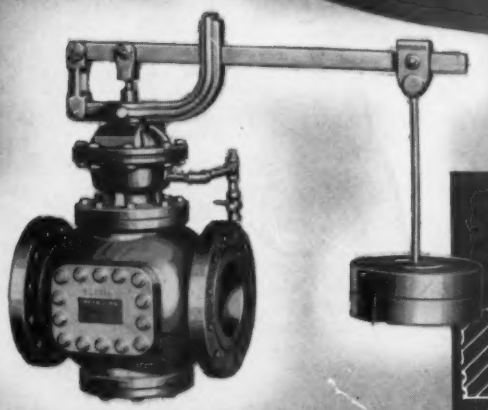
Gas Journal

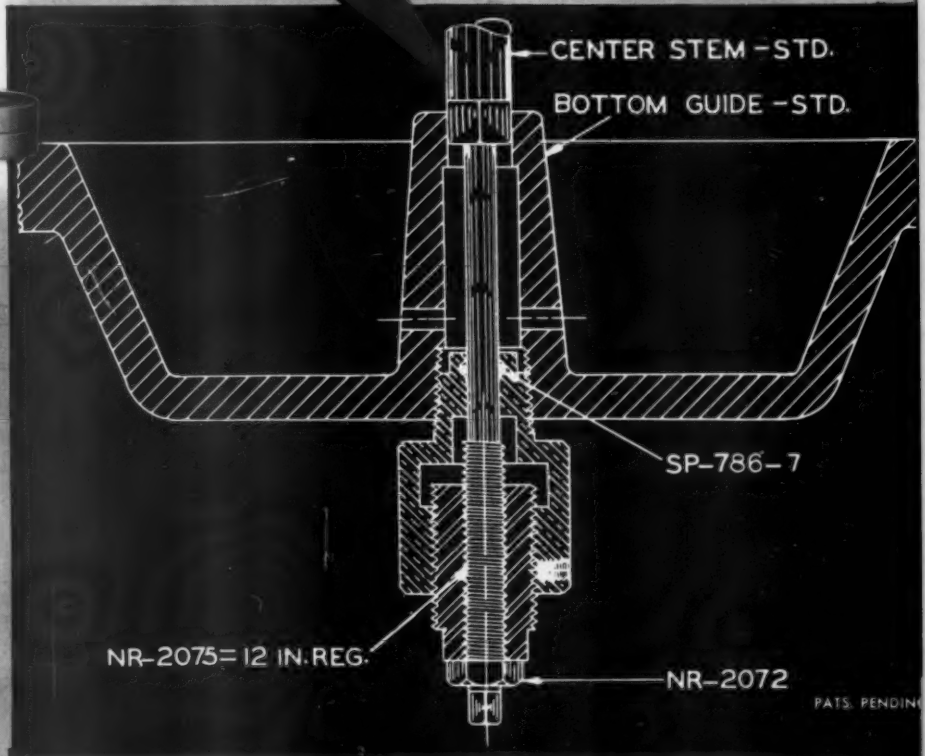
SOUTHERN GAS ASSOCIATION Issue

COPYRIGHT DEPOSIT

Reynolds OFFERS A NEW PERFECTED SAFETY CONTROL FOR ALL STATION AND HIGH PRESSURE LINE REGULATORS

LIBRARY OF CONGRESS SERIAL RECORD
JUL 23 1954





Reynolds new Safety Control may be attached to any Reynolds station or high pressure line regulator now in use. Prevents regulators from falling in wide open position. Makes possible setting for industrial customer so no unusual drag can be put on line in event of low pressures in supply line. Can be set for winter or summer loads and can be changed quickly and easily.

NOTE: Valve Travel may be adjusted without disturbing the regulator or the gas flow by loosening locknut (N. R. 2072) and adjusting stem (N. R. 2075) to desired height.

The height may be calculated accurately by counting the 16 pitch threads from the bottom of the nut, R-2072, which allows the customer to get almost a micro-adjusting stem.

GAS CONTROL SINCE 1892

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

This clean, compact industrial "fuel bin" is made up of Rockwell No. 5 meters, "014" regulators and Nordstrom valves.

DO YOU HAVE UP-TO-DATE CATALOGS?

We are constantly revising our product sales literature and parts bulletins. Chances are your file is not up-to-date. Ask the Rockwell representative to check it with you the next time he calls.

When you need the accuracy of positive displacement measurement for large volume loads you can rely on Rockwell pressed steel meters to return every cent of revenue due you. You can rely on Rockwell "014" balanced valve regulators to maintain a constant pressure to the inlet of these meters so that their in-built accuracy will not be disrupted by pressure fluctuations. Too, you can rely on Rockwell-built Nordstrom valves for the quickest, easiest, most positive closure, even if operated infrequently.

Over the years you will find these better built Rockwell products will perform faithfully with minimum attention. When required, they are the most economical to repair.

YOU CAN RELY ON ROCKWELL

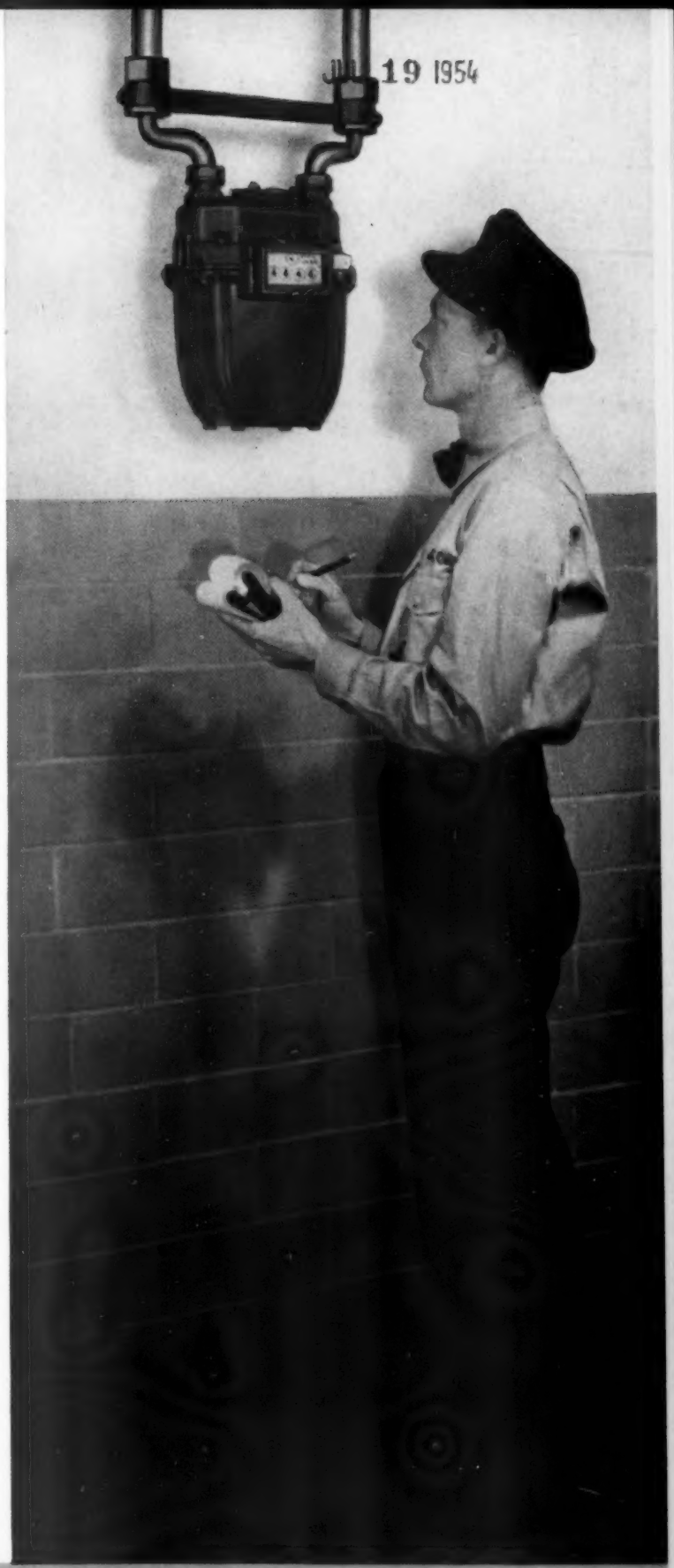
ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Chicago Houston Los Angeles New York
N. Kansas City Philadelphia Pittsburgh San Francisco Seattle Tulsa
In Canada: Peacock Brothers Limited

JUL 19 1954

FOR THE MAN WITH A LOAD ON HIS MIND

...The House Heating Load



Here is our answer to your meter capacity and safety problems when heating with gas. It's the new Rockwell No. 1 meter. It has a sturdy, pressure cast aluminum alloy case. From within its compact dimensions you get a generous margin of capacity—more than enough for any space heating job. You get peace of mind, too, since this meter has a high degree of impact resistance.

The light weight of the Rockwell No. 1 (only 22 lbs) permits easy one man installation. With offset swivels it will fit right into your present meter bar set; on new services you don't even need a meter bar.

Resolve now to replace your old style tin meters and obsolete types of cast iron meters with new Rockwell No. 1 aluminum meters. On either old or new service outlets you stand to gain from the accuracy, durability and maintenance ease that are basic to the Rockwell design.

ROCKWELL

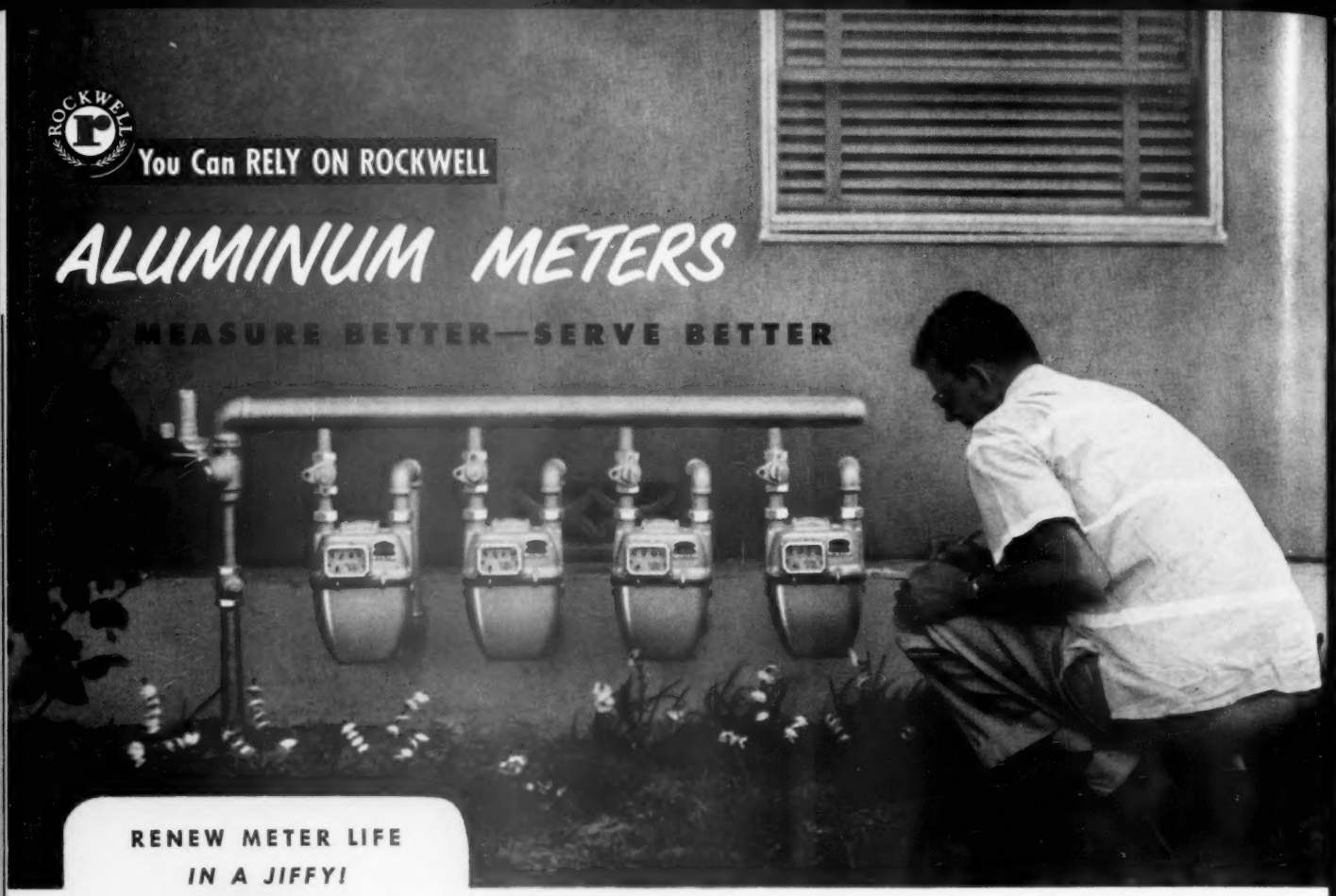
ROCKWELL No. 1 *Aluminum* METER

Weighs only 22 lb. Capacity 275 cfh. (at ½" pressure drop with 0.60 sp. gr. gas)

You Can RELY ON ROCKWELL

ALUMINUM METERS

MEASURE BETTER—SERVE BETTER



RENEW METER LIFE IN A JIFFY!

Just remove a few cap screws and pull entire measuring unit from the bowl type meter body. Replace old unit with either a new or rebuilt duplicate and the meter is ready for another period of extended service. Write for details.

YOU'LL PROFIT MORE when you measure your domestic services with Rockwell aluminum meters. That's because these lightweight, attractive measuring instruments are durable, lastingly accurate and the most economical to repair. For safety, aluminum alloy housings of high fracture resistance are used. These meters will not rust or corrode even when installed out-of-doors. And in the Rockwell design there is only one gasketed joint to seal against leakage.

Now you can select from *three sizes* of Rockwell aluminum meters having capacities of 150, 175 and 275 cu. ft. per hour, respectively, at conventional ½ in. pressure drop ratings. Write for bulletin.

ROCKWELL MANUFACTURING COMPANY

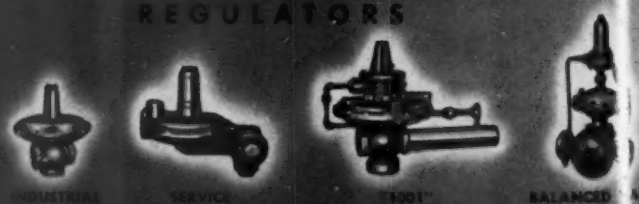
PITTSBURGH 8, PA. • Atlanta • Boston • Chicago • Houston • Kansas City • Los Angeles
New York • Pittsburgh • San Francisco • Seattle • Tulsa

There's a ROCKWELL METER and REGULATOR for every use

METERS

ALUMINUM CAST IRON PRESSED STEEL

REGULATORS



INDUSTRIAL SERVICE "1001" BALANCED VALVE

AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 180 MAY 1954 NUMBER 5

SOUTHERN GAS ASSOCIATION Issue

This month...

The May issue of AMERICAN GAS JOURNAL is becoming a bit of a milestone. With this one, five years of publication under the present management have been completed. Before we go one word further—we are looking forward to many more years! About five years from this moment we certainly shall be engulfed by proofs for our *100th Anniversary Issue*. In the meanwhile, we are at work and we are planning to bring to our pages, month-after-month, articles and news that will be useful and informative to the gas industry—we never lose sight of the fact that AMERICAN GAS JOURNAL exists, and shall continue to exist, for the sole purpose of serving that industry.

• • •

This year again, May is the month for our *Southern Gas Association Issue*. It was 152 years ago that the gas industry of The South had its flickering birth in a single street lamp in Richmond, Virginia. There seems to be an adequate basis for believing that the industry has established itself rather well in the Southern states, since then. So, we are pleased to indicate our high regard for SGA, with this issue, on the occasion of its 46th Annual Convention, in Houston.

The editors of AMERICAN GAS JOURNAL extend their own hearty greetings to the SGA Convention, together with a sincere wish for another year of gratifying accomplishment.

• • •

Let it not be said that we have omitted editorial comment, this month. Blue pencils went to Hansell Hillyer and Sheldon Coleman for their use as they saw fit. We welcome these two forthright proponents of aggressive gas industry policy-and-action to our pages.

Contents

Guest Editorial: Before the Roof Falls In—Hansell Hillyer 22
Editorial: Just What Is The Gas Industry? 23
Southern Gas Association's 46th Annual Convention Under Way in Houston 24
SGA Closes Active Year and Moves Toward New Heights —H. K. Griffin 25
Houston: A-Boomin' for 118 Years 27
Southern Union Gas Company Uses New Device for Finding and Locating Gas Leaks—William V. Gilpin 28
Tampa Gas Co. Installs New Wrinkle to Improve Customer Service—Cut Expense—Lawrence C. Jewett 30
Natural Gas Educational and Research Programs Expand at Texas A & I College—Frank H. Dotterweich 32
Emphasis on Year-'Round Air Conditioning Is Feature of Southern Construction 34
Oklahoma Natural Gas Company Promotes Industrial Development in Service Area—Joseph Bowes 35
Post-War Adjustment Almost Ended—John F. Falvey 36
Old Days Recalled . . . from AMERICAN GAS JOURNAL—90 Years Ago . . . 50 Years Ago . . . 25 Years Ago 38
American Gas Fundamentals: Glossary of Gas Industry Terms: Spe to Up S 39
How Lone Star Gas Company Practices Safety and Makes It Pay Off—A. W. Breeland 45
The Extent of Utility Liabilities in Law of Attractive Nuisance—Leo T. Parker 46
News of the Gas Industry 47
New Equipment 55
New Bulletins 56
Federal Power Commission 58
Gas Industry Calendar 60
AMERICAN GAS MERCHANDISING 61
Guest Editorial: All Aboard for Action—Now!—Sheldon Coleman 62
Pioneer Natural Gas Co. Cooperates with Dealers to Boost Appliance Sales 63
Southern Union After Workers Leads as Spring Style Show Gets Under Way 65
Gas Appliance Industry News 66
New Bulletins 70
New Gas Appliances 71
Index to Advertisers 74

Hilding H. Carlson • Editor

Bernard W. Morris • News Editor

Charles R. Bellamy • Technical Editor

Arthur Rohman • Western Editor **John F. Falvey • Financial Editor**

AMERICAN GAS JOURNAL, established 1859, is published monthly except October, semi-monthly, by American Gas Journal, Inc., 205 East 42 St., New York 17, N. Y. ROBERT M. POE, President and Treasurer; P. M. MALONEY, Secretary.

ADVERTISING REPRESENTATIVES: John P. McDermott, Edwin J. Volckmann, 205 E. 42 St., New York 17, MU 6-4360; Urben Farley & Co., 120 S. LaSalle St., Chicago 3, FI 6-3074; Jack O. Hodges, 479 S. Holt Ave., Los Angeles 48, BR 2-3935; Geo. F. Haines, 681 Market St., San Francisco 5, DO 2-4475.

Member Audit Bureau of Circulations and National Business Publications.

Copyright, 1954, American Gas Journal, Inc., New York, N. Y.

Subscription Rates: U.S. $3.00 per year; Canada, $4.00; Foreign, $10.00. Single copies, 50 cents.
October 1 Handbook issue not sold separately.

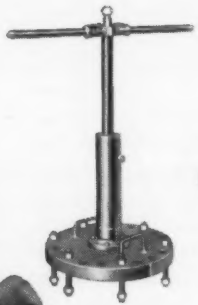
MUELLER®

No. 4 LINE STOPPER UNIT

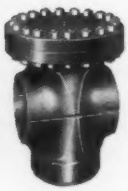
PATENTED

Stop off 10" and 12" steel lines safely, under pressure, with the Mueller No. 4 Line Stopper Unit. Equipped with series 40 flanges, the No. 4 Unit is designed for working pressures of 500 psi and temperatures up to 250° Fahrenheit with an adequate factor of Safety.

• The H-17440 Line Stopping Machine, with steel wedge stopper and special rising stem steel gate valve.



• The H-17445 balanced pressure Completion Machine.



• The H-17257 Line Stopper Fitting, sizes 10" and 12", complete with "O" ring type, balanced-pressure completion plug. Spring-loaded ball check valve in completion plug, activated by the inserting or extracting tools, assures equal pressure on both sides, allowing easy insertion and extraction of the completion plug.

Write for complete information on the No. 4 Line Stopper Unit.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

AMERICAN GAS JOURNAL, May, 1954. Vol. 180, No. 5. Published monthly (except October, then semi-monthly), by American Gas Journal Inc., at 73 Main Street, Brattleboro, Vt. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vt. under Act of March 3, 1879. Executive and editorial offices at 205 East 42nd St., New York 17, New York. Subscription prices, U.S. $3 per year; Canada $4; Foreign $10. Single copies 50 cents, except October 1 issue, which is not sold separately. Printed in U.S.A.

United's construction inspection service was furnished for this Dual 16" Schuylkill River Crossing of Philadelphia Electric Company at West Conshohocken, Pennsylvania

All 4 major construction needs of gas companies

These construction needs are met by United's complete and flexible engineering and construction services for operating gas companies—which include a gas main and pipe-line construction inspection service to assist with distribution system extensions.

1. GAS MAINS AND PIPE LINES. Pipe lines—distribution mains — water and river crossings. Construction inspection — construction — construction management.

2. OIL GAS SETS. Heavy oil regenerative apparatus—new and converted apparatus for light oil — light oil recovery plants — oil gas plants and auxiliaries.

3. C.C.R. PROCESS.* Produces low and high gravity city gases, synthesis gases, gases of sendout heating values from 700 to 1,000 Btu — using natural gas, L.P. gases, gasoline, naphtha, or kerosene.

4. GENERAL PLANT EXTENSIONS. Through the years United has built up large, well organized forces for handling general plant extensions for both natural gas and other plant equipment.

The services provided by United are flexible and may be adjusted in scope to meet your specific needs. No matter what your project, we invite you to share our experience and facilities as designers, contractors, and consulting engineers.

*Patents Pending

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK 17 **PHILADELPHIA 5** **CHICAGO 2**

WITH A BACKGROUND OF OVER SEVENTY YEARS' EXPERIENCE

FISHER® FACTORIES

MARSHALLTOWN, IOWA

• Above—Factory No. 1. Over 255,000 sq. ft. of floor space. The industry's most modern plant. Here the world's largest production of pressure and liquid level control equipment is made possible by Fisher's unequalled research, design, engineering, testing and manufacturing facilities.

• At Left—Factory No. 2. Over 67,000 sq. ft. of floor space. A major unit in Fisher's continuing expansion program of increased facilities and production.

FISHER®

PRESSURE REGULATORS

•

GAS REGULATORS

•

LIQUID LEVEL CONTROLLERS

•

DIAPHRAGM CONTROL VALVES

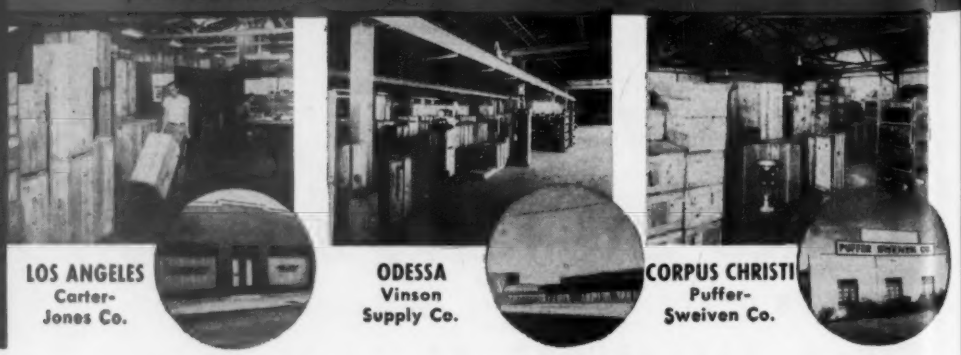
•

PUMP GOVERNORS

•

LEVER and FLOAT VALVES

A few typical Fisher Warehouse Stocks of new equipment and replacement parts are shown below.



LOS ANGELES
Carter-Jones Co.

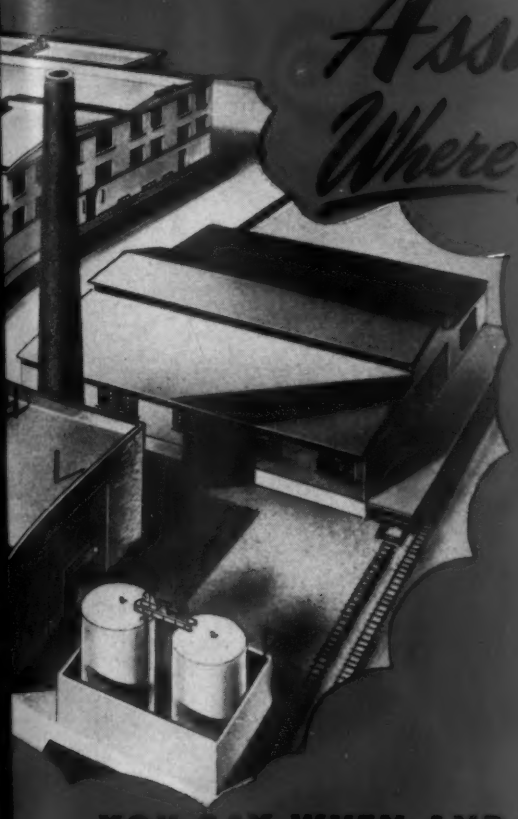
ODESSA
Vinson Supply Co.

CORPUS CHRISTI
Puffer-Sweiven Co.

AND FIELD STOCKS

Assure You Delivery

Where you want it! When you want it!



YOU SAY WHEN AND WHERE AND WE'LL BE THERE!

You are always close to a source of supply of Fisher control valves, gas regulators, liquid level controllers and pressure regulators.

Whether your problem is one of existing equipment—or an entirely new control application—the Fisher country-wide net-work of 19 strategically located field stocks and 49 representatives—with over 200 Fisher Service Engineers—offers you immediate and convenient service on all your control requirements.

FISHER GOVERNOR COMPANY

MARSHALLTOWN, IOWA

WORLD LEADER IN RESEARCH FOR BETTER PRESSURE AND LIQUID LEVEL CONTROL

FISHER SERVICE DIRECTORY

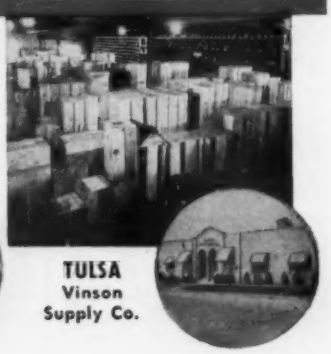
ALBANY
Malcolm W. Black & Co.
* **AMARILLO**
Vinson Supply Co.
ATLANTA
Rittelmeyer & Co., Inc.
BALTIMORE
Rhodes Controls Co.
BIRMINGHAM
Jos. W. Eshelman & Co., Inc.
BOSTON (West Newton)
Wickersham, Petty & Co.
BUFFALO
W. J. Sommers Co.
* **CALGARY**
Barber Engineering & Supply Co.
CHARLOTTE
Robert E. Mason & Co.
CHICAGO
General Meters & Controls Co.
CINCINNATI
Harry T. Porter Co.
CLEVELAND
A. E. Ehrke & Co.
* **CORPUS CHRISTI**
Puffer-Sweiven Co.
* **DALLAS**
Vinson Supply Co.
* **DENVER**
Joy & Cox, Inc.
* **DETROIT**
DuBois-Webb Co.
HONOLULU
H. S. Gray Co.
* **HOUSTON**
Puffer-Sweiven Co.
INDIANAPOLIS
Acme Engineering Agency
KANSAS CITY
Sullivan-Mears Co.
* **LOS ANGELES**
Carter-Jones Company
LOUISVILLE
Allan K. Cook Co.
* **MARSHALLTOWN**
R. S. Stover Co.
MEMPHIS
Johnson & Scott
MILWAUKEE
Warren D. Ehrke & Co.
MINNEAPOLIS (Hopkins)
J. F. Schultz & Co.
* **MONTREAL**
Process & Steam Specialties, Inc.
MUSKEGON
DuBois-Webb Co.
NARBERTH, PA.
Clifford B. Ives & Co.
NASHVILLE
Johnson & Scott
* **NEW ORLEANS**
John H. Carter Co.
NEW YORK
Malcom W. Black & Co.
NORTH LITTLE ROCK
Johnson & Scott
* **ODESSA, TEXAS**
Vinson Supply Co.
PHOENIX
Cone & Wallace Co.
PITTSBURGH
W. A. Stoeltzing
* **PORTLAND, ORE.**
Richard H. Brown & Co.
RICHMOND
W. H. Kidd & Co.
* **SAN FRANCISCO**
George R. Friederich & Co.
SAN JUAN
F. A. Ortiz & Co.
SALT LAKE CITY
Williams, Gritton & Wilde
* **SEATTLE**
Barrett & Yost
* **SHREVEPORT**
John H. Carter Co.
* **SOUTH EDMONTON**
Barber Engineering & Supply Co.
ST. LOUIS
H. D. Hale & Co.
* **TORONTO**
George W. Beecroft Co., Ltd.
* **TULSA**
Vinson Supply Co.
VANCOUVER
Northern Columbia Process Equipment Co.
WICHITA
Sullivan-Mears Co.

* *Indicates Field Stocks.*

HOUSTON
Puffer-Sweiven Co.

NEW ORLEANS
John H. Carter Co.

DALLAS
Vinson Supply Co.



TULSA
Vinson Supply Co.

A Supplier To The

...American Meter Company realizes the stake we all have in the future of this great industry.

Our Company is aware of the vast importance of developing a better understanding of the contribution gas can make to this and newer generations. The company has initiated a national advertising program to help the entire industry build this future.

The theme of the program is...

Gas is Modern — when you build, buy or remodel, be sure your home is PIPED FOR GAS.

AMERICAN METER COMPANY
INCORPORATED, ESTABLISHED 1836

GENERAL SALES OFFICE: 1531 Race Street, Philadelphia • Albany • Alhambra • Atlanta
Baltimore • Birmingham • Boston • Chicago • Dallas • Denver • Erie • Houston • Kansas City
Los Angeles • Minneapolis • New York • Omaha • Pittsburgh • San Francisco • Seattle • Tulsa
IN CANADA: Canadian Meter Company, Limited, Hamilton • Edmonton • Calgary

Gas Industry Speaks

How Gas packs your home with Comfort
With Automatic Gas Equipment, you will be years ahead in comfort, convenience and dependability.
You will enjoy the luxurious warmth of automatic gas heating... finest, fastest automatic gas cooking and gas water heating... silent, automatic gas refrigeration... automatic gas clothes drying... economical year 'round air-conditioning and incineration. And remember, Gas appliances cost less to buy, to install and to operate.
Plan your home around the convenience and economy of Gas appliances. Pipe it for Gas! Make yours an All-Gas home! Visit your Gas Company today for up-to-date product information and sound planning help for new and old homes alike.
AMERICAN METER
Suppliers To The Gas I
Gas
IS MODERN BECAUSE Gas IS
Automatic
Clean
Dependable
Economical
...and you get any degree of heat control
Fast
When you build, buy or remodel, be sure your house is piped for gas
AMERICAN METER COMPANY
INCORPORATED (ESTABLISHED 1836)
SUPPLIERS TO THE GAS INDUSTRY

SATURDAY EVENING POST

LIFE

Color reprints of these ads, and mats for black and white newspaper reproduction, with space for your company signature, are available upon request.

AMERICAN METER CO. EST. 1836 MEASUREMENT ENGINEERS

Your MUELLER "D-4"

Stopping-off a line with the "D-4" and a Line Stopper Fitting or an Extension Stopper Fitting.

Although basically a drilling machine, the Mueller "D-4" Machine is also designed for plugging and stop-off operations with Mueller No-Blo Fittings. The "D-4" may be used to drill through any No-Blo Tee, Main Stop, Line Stopper Fitting or Drilling Nipple from ¾" through 2". This same "D-4" will then insert the completion plug and, in the case of Service Tees and Service Line Stopper Fittings, is also used to stop-off the line. Shown are only a few of the many installations possible with this versatile machine and its related No-Blo Fittings.

MUELLER NO-BLO Method

This is another of a series showing the broad application of Mueller No-Blo Fittings and the Machine used for their installation.

NO-BLO FITTINGS USED WITH THE "D-4" MACHINE

Service Tees ¾" through 2"

Service Valve Tees 1" and 1¼"

Curb Valve Tees 1" through 2"

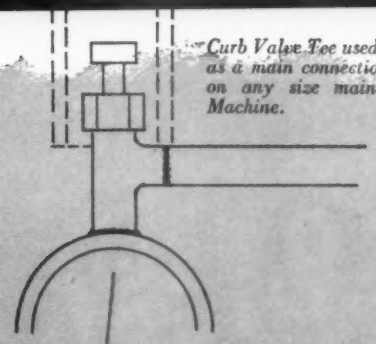
Gas Main Stops ¾" through 2"

"Save-A-Valve" Drilling Nipples ¾" through 3"

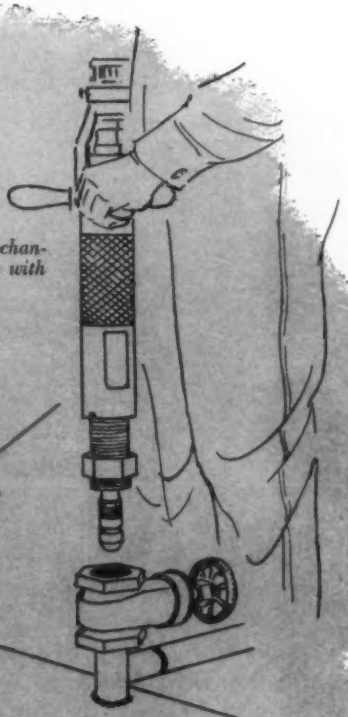
Line Stopper Fittings ¾" through 2"

Extension Stopper Fittings 1½" and 2"

PATENTED



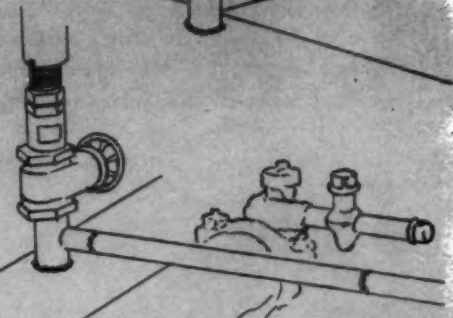
Curb Valve Tee used with Curb Box as a main connection and installed on any size main using "D-4" Machine.



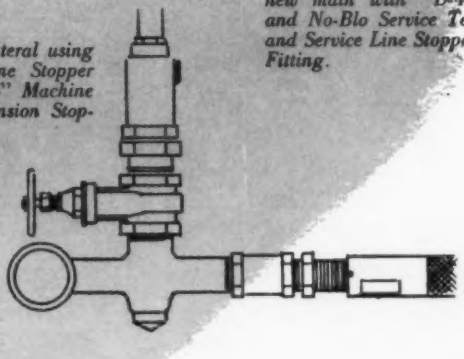
Inserting valve mechanism into Valve Tee with a "D-4" Machine.

Drilling Machine

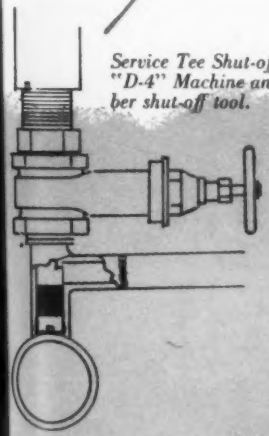
Makes these connections and stop-offs Safely under pressure



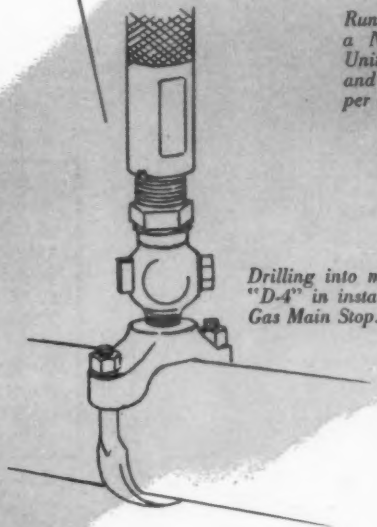
Setup used to transfer service from old main to new main with "D-4" and No-Blo Service Tee and Service Line Stopper Fitting.



Running a lateral using a No. 1 Line Stopper Unit, a "D-4" Machine and an Extension Stopper Fitting.



Service Tee Shut-off with "D-4" Machine and rubber shut-off tool.



Drilling into main with "D-4" in installation of Gas Main Stop.

For additional information on products or installation methods, consult your No. 50 or 55 Catalog, contact your Mueller representative or write direct.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

how ONE SERVEL SALE means a Double Profit for You!

1 SERVEL, the Gas Refrigerator, is different because it's the only refrigerator that makes ice cubes without trays and puts them in a basket . . . all automatically! The only refrigerator with no moving parts in its freezing system . . . stays silent, lasts longer. Only SERVEL Gas Refrigerators offer a ten year warranty . . . the longest and strongest warranty you'll find. No other refrigerator in the world has these outstanding sales advantages.

2 SERVEL, the Gas Refrigerator, forges the final link for the all gas kitchen . . . safeguards domestic load! The amazing, profitable SERVEL is also a constant source of steady, day-in and day-out revenue throughout the year. The SERVEL Gas Refrigerator with all its outstanding features will not only maintain that gas kitchen load but will further popularize gas . . . the modern fuel.

no messy ice trays!

Simply pick the dry, loose, super-cold IceCircles out of the basket. The new Servel refills itself, then turns off, automatically! From automatic defrost, to the separate freezer compartment, to door shelves, to the trip-saver handle, this new Servel has every deluxe feature your customers ever wanted plus the refrigeration miracle of ice "cubes" without trays — automatically!

SERVEL AD DRIVE STARTS THIS MONTH!

Get complete information on how you can cash in on this great advertising and promotional drive with TV, radio, newspapers and billboards in your own local area!

SEE YOUR SERVEL DISTRIBUTOR TODAY!

A complete line of fully automatic gas water heaters in a range of sizes to fit every need! Servel — the most dependable, trouble-free automatic water heater on the market!

The name to watch for great advances in **REFRIGERATION** and **AIR CONDITIONING**

Servel

Servel Inc., Dept. AG5, Evansville 20, Indiana

1. Availability
2. Dependability
3. Uniformity...

then Economy

the THREE prime requirements of a satisfactory . . . GAS ODORANT

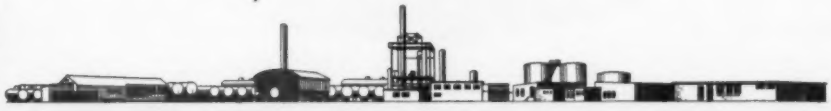
Prompt Service from our . . .

- EXPERT SPECIALLY TRAINED ENGINEERS
- COMPETENT OFFICE FORCE
- STRATEGICALLY LOCATED WAREHOUSES
- RELIABLE SHIPPING SERVICE

All of the CAPTANS measure up — how about yours?

For information or expert aid in your odorization work, *wire, write* or *phone*

captan



4937

NATURAL GAS ODORIZING CO., INC.

P. O. BOX 1645 HOUSTON, TEXAS

There's no customer

Ewing Galloway

This is Baltimore—a thriving city of nearly a million population.

Bettmann Archive

This is a view of Baltimore, from Federal Hill, as it looked about 100 years ago.

MODERNIZED cast iron

like an old customer!

BALTIMORE'S Consolidated Gas Electric Light and Power Company bought cast iron pipe 100 years ago... and buys it today.

The first gas franchise in America was granted to The Gas Light Company of Baltimore, predecessor of the Consolidated Gas Electric Light and Power Company of Baltimore. Today, this progressive Company is serving 329,617 customers with approximately 2100 miles of mains, the majority of which are cast iron. A section of one of these mains, laid prior to 1830, is shown below (see cut).

When you have customers with an unbroken record of buying your product for over a century, you naturally prize them. They're scarce in any long-established business or industry. The cast iron pressure pipe industry is proud to have 60 such customers—utilities that have been buying cast iron pipe for gas or water mains for 100 years or more.

Today's *modernized* cast iron pipe—centrifugally cast and with standardized mechanical joints—is even more economical and efficient. The pipe is stronger, tougher, more uniform in quality. The mechanical joints are bottle-tight for usual gas pressures and for all types of gas.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.

This 10-inch cast iron gas main was laid in Baltimore over 120 years ago and is still serving. It is America's oldest functioning gas main.

CAST Q IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

pipe FOR MODERN GAS DISTRIBUTION

Leaders in Pipe Line Construction

Installation of Major Transmission Line By a Hallen Co. Crew

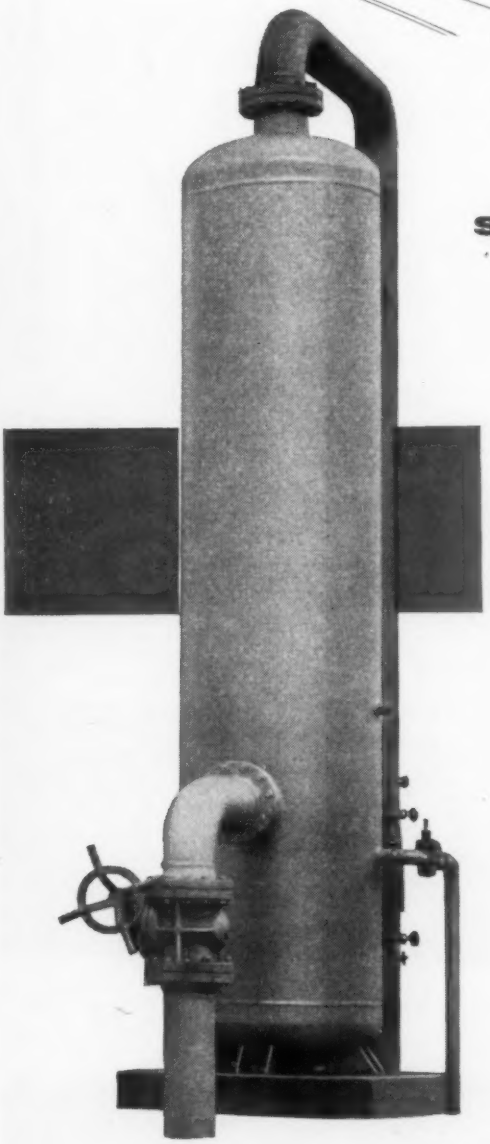
THE HALLEN COMPANY, INC.

STEEL ERECTION
BRIDGES & STRUCTURES
PIPE LINES
HORIZONTAL EARTH BORING

HALCOWELD

RAILROAD & INDUSTRIAL
MAINTENANCE & REPAIR
SPECIALIZED FABRICATION
METERING STATIONS

45-30 THIRTY-SEVENTH STREET
LONG ISLAND CITY 1, NEW YORK



Blaw-Knox gas cleaner saves $3600 a year in maintenance costs

For over 31 years, the compressor station illustrated above pumped an average of 3 million cubic feet of gas per day from Western Pennsylvania wells. During that time, damage to compressor parts from entrained dust cost the company $3600 a year.

This figure does not include costly damage to meters and regulators in the distribution system, the revenue lost as unmeasured gas or the expense of cleaning out service lines and pilots.

Since 1942, when a Blaw-Knox Gas Cleaner was installed, maintenance resulting from pipeline dust has been negligible. Dust removed from the cleaner has averaged 11 bushels every three months, or over 30 pounds a day.

Field tests repeatedly have shown that outlet gas from Blaw-Knox Gas Cleaners is free of dust, regardless of the quantity or particle size entering the equipment.

The low maintenance cost and remarkable efficiency of Blaw-Knox Gas Cleaners are the result of a unique oil scrubbing principle, coupled with continued design improvement based on careful field and laboratory study.

When you buy, specify Blaw-Knox. You'll be sure to remove even the finest particles of dust.

The new Blaw-Knox Bulletin No. 2450 contains complete information. Write for it.

BLAW-KNOX COMPANY

Blaw-Knox Equipment Division
Gas Equipment Department
Pittsburgh 38, Pennsylvania

TWO GREAT NAMES...

Mader's GERMAN RESTAURANT MILWAUKEE, WISCONSIN

Equipped with **GARLAND...**

THE GREATEST NAME IN COMMERCIAL COOKING!

GARLAND IS THE CHOICE OF AMERICA'S MOST *FAMOUS* RESTAURANTS!

There are good reasons for Garland's top rating among those who prepare choice foods! They know Garland is unequalled for flexibility, dependability, and economy of operation. They know Garland is built to last! They know, too, that Garland is fired by gas, *the ideal fuel!* That's why Garland is used in more leading restaurants, hotels, clubs, schools, and institutions than any other make! Phone, wire or write for full details!

Head chef, Katherine Mader, says: "I really appreciate Garland's rugged construction and flexibility! There's no doubt about it, Garland and gas certainly do the best job of cooking!"

The battery formation illustrated includes: Spectro-Heat Hot Top; Open Top; Unitherm Fry Top; Deep Fat Fryer; and Side Fired Broiler. Units available in standard black-Japan or Stainless Steel finishes.

45 TWENTY NINE

Have you joined the 45-29 Club?

Visit Detroit-Michigan Stove Company Booths 369-370, National Restaurant Show, Navy Pier, Chicago—May 10 thru 14.

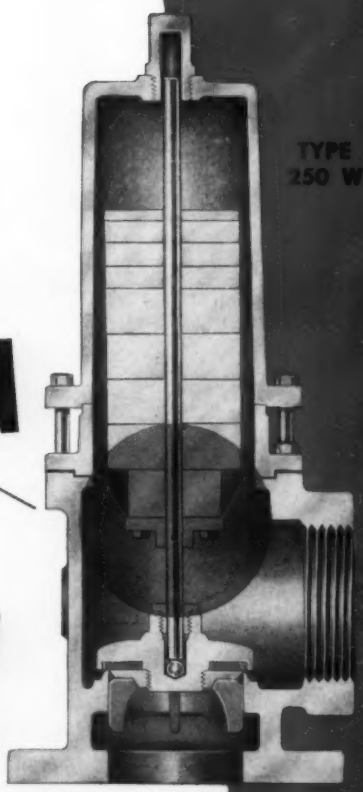
GARLAND

DM PRODUCTS

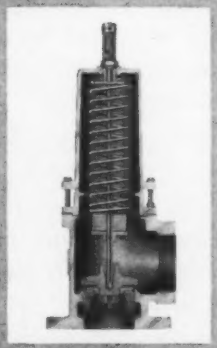
Heavy Duty Ranges • Restaurant Ranges • Broiler-Roasters • Deep Fat Fryers
Broiler-Griddles • Roasting Ovens • Griddles • Counter Griddles • Dinette Ranges

PRODUCTS OF DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN
IN CANADA: GARLAND-BLODGETT LTD.—1272 Castlefield Ave., Toronto

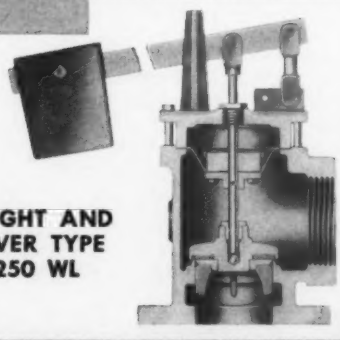
WHAT A DIFFERENCE A "D" MAKES in the NEW CHAPLIN-FULTON High Capacity Safety Valves



"D" stands for diaphragm, and what a difference it makes in the discharge ability of the new Chaplin-Fulton High Capacity Safety Valves—2½ times more flow capacity. After initial opening, the discharge pressure acting upward on the diaphragm insures maximum opening, and guarantees full flow with minimum increase in in the blowing pressure. This means greater protection for the users of Chaplin-Fulton Type 250 Safety Valves, adaptable in three models to all gas systems from ounces to 100 pounds. Sizes 2" to 6" inclusive.



SPRING TYPE
250 S



WEIGHT AND
LEVER TYPE
250 WL

Simple.... Foolproof

ACCURATE CP MFG. CO. DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

SV-53-1

Congratulations to Southern Gas Association

HOW EBASCO HELPS THE GAS INDUSTRY

system planning on a long-range basis

With years of background experience in the gas utility industry and the knowledge of probable future developments, Ebasco offers a system planning service to meet the specific needs of all types of gas utilities both large and small.

Ebasco can assist you with your market surveys, load growth forecasts, service requirement studies, present system performance analyses. The relative merits of alternate development plans will be compared and an economic program for the immediate and long-range future will be recommended.

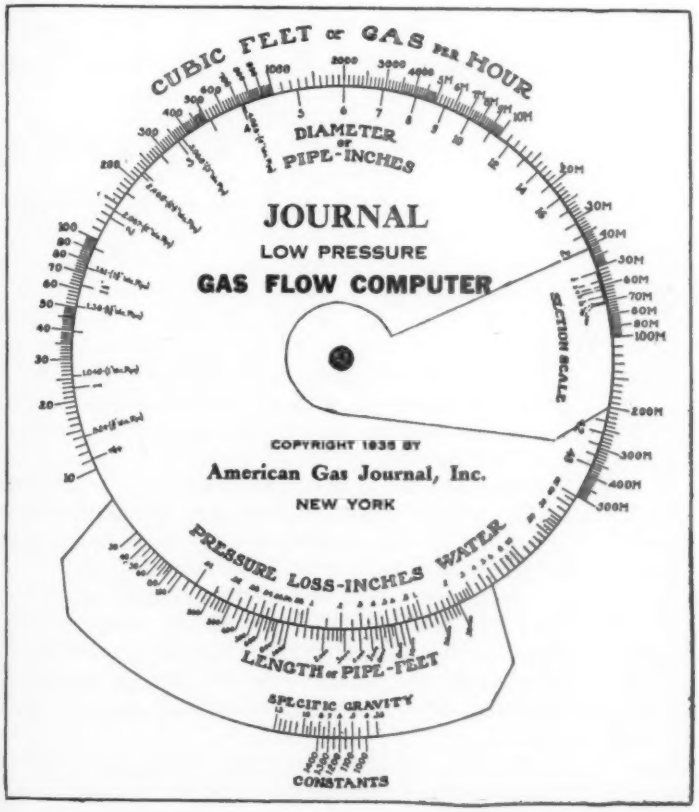
Entire systems from gas field and production facilities to the customer, or the component parts, are covered as may be desired to meet the requirements of the particular situation—including pipe lines, compressor-stations, peak-shaving, conversion, manufactured gas plants, and distribution.

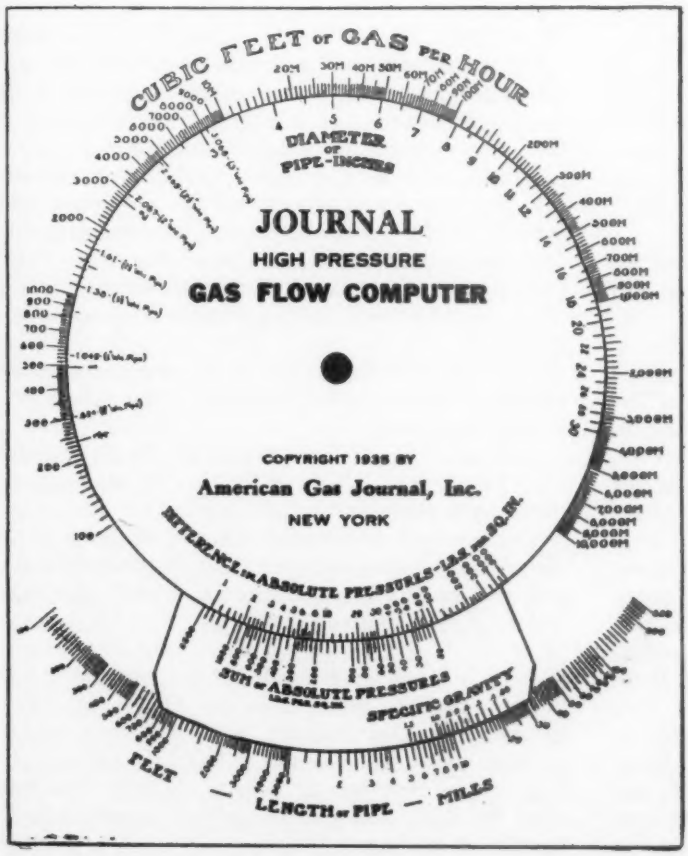
Our booklet—"The Inside Story of Outside Help"—describes Ebasco services and how they may be of use to you. For a copy, write or phone Ebasco Services Incorporated, Dept. S, Two Rector Street, New York 6, N. Y.

NEW YORK • CHICAGO • DALLAS • WASHINGTON, D. C.

ENGINEERS · CONSTRUCTORS · EBASCO · BUSINESS CONSULTANTS

Appraisal • Budget • Business Studies
Consulting Engineering • Design & Construction • Financial • Industrial Relations • Inspection & Expediting • Insurance, Pensions & Safety • Purchasing Rates & Pricing • Research • Sales & Public Relations • Space Planning Systems & Methods • Tax • Traffic
Washington Office





JOURNAL
Gas Flow
COMPUTERS

FOR LOW PRESSURES:

Cubic feet of gas per hour . . . . . 10 to 500M
Pipe diameters . . . . . ¾" to 48"
Pressure loss (inches) . . .01 to 10
Specific gravities . . . . . 1.5 to .35
Constants . . . . . 1400 to 1000
Pipe length (feet) . . . 30 to 30,000
Price $5.00

FOR HIGH PRESSURES:

Cubic feet of gas per hour . . . . . 100 to 10MM
Pipe diameters . . . . . ¾" to 30"
Difference in absolute pressure to . . . . . 500 psi.
Sum of absolute pressures . . . 20 to 2,000 psi.
Specific gravities . . . . . 1.5 to .35
Pipe length (feet) . . . 100 to 5,000
Pipe length (miles) . . . . . 1 to 250
Price $5.00

The computers are printed on heavy durable plastic, enclosed in leatherette cases with complete instructions for their use.

PUBLISHED AND SOLD ONLY BY:

AMERICAN Gas Journal

205 E. 42nd Street,
New York 17, N. Y.

Guest Editorial:

by **Hansell Hillyer**
Vice-chairman, Advisory Council,
Southern Gas Association
President, South Atlantic Gas Co.

Before the Roof Falls In

IN a three-story house on the Main Street of America, sits the 6th biggest business in the Nation.

It may be the most amazing business of all—because it's growing like a mushroom—and going to Hell in a hack!

Bloated and swelling with the unhealthy fat of its peak loads—it's being pulled down toward financial anaemia by the white corpuscular growth of electric competition at domestic level.

This three-story structure is the House of Gas.

It had to be built on a hillside, because no occupant of any floor cared to be seen coming in or going out with those from any other floor. Once in a while, some of them do meet around the country at one another's conventions, and then—like seashore acquaintances—they swear by all that's holy they're going to see lots of one another and build something real out of these friendships when they get back home. But—another year goes by—with nothing done.

Now, the only floor that's shared by more than one branch of the gas family is the basement. It's occupied jointly by the gas distributing companies, the propane companies and the appliance manufacturing companies. These three are the only groups who appear to recognize that their relationship is in their blood—the rent is cheap—and three can live cheaper than one, if all of them work.

Above them, the second floor is occupied by the Lower Aristocracy of the Gas Trade—or rather that part of its aristocracy that has to admit being in the utility business. These are the Dukes and Earls of Gasdom who, although they must fawn upon the Kings, are privileged to apportion either the high-cost of living, or their cost of high living, among the people of lower estate.

These are the Pipeliners, with a lovely view of the river and Cadillacs crunching the shell of their private drives.

Telephone and speaking tube connections downstairs do lend a sort of democratic touch, while pneumatic tubes make for a more facile, though no-less-painful, delivery upward of the Distributors' monthly settlement checks. Though laden with glamor theirs may prove a fleeting Paradise.

Now, the third floor is "plush". Here in penthouse luxury, ankle deep in carpet, recline those who maintain contact with their own "top-brass" in Florida and Cannes and Scotland and Cairo and Newport and Saratoga where discovery and drilling and exploration are at their traditional best. They truly seem anointed of the Lord—anointed with oil of their own discovery. But no longer need they go out to seek the fat of the land, for they are the fat of the land.

These are the owners and producers of gas. They really own the whole building, but so far they seem content merely to keep the penthouse as a club room, for gas is only the butter on their bread.

They are in a sense more democratic, however, than the second floor people are with the basement folks. They do have a lovely private infirmary with its own blood bank and, at intervals, the pipeline people are allowed to come upstairs and visit—always, of course, as donors.

Since the penthouse has no connection with the basement, the producers do not know how full it is of Ready Kilowatt termites—only the people who live and work there really see them. And, since the club is so insulated for air conditioning that no sound comes in and there are no windows, the producers cannot see that the river that looks so lovely from the pipeliner's windows really is a swollen stream of electric competition—and that, for years, its rising tide has been undermining the whole damn building.

With a tenth the forthrightness they have shown in the development of oil, these gas producers could "spin off" their gas holdings to their own shareholders (tax exempt), declare them what they are—PUBLIC UTILITIES—throw the weight of their support into the battle and, by thus facing-up to the responsibility of ownership, win the battle at the domestic level, save the pipeline and distribution companies and their own properties from the otherwise-inevitable calamity of Public Ownership.

Do you suppose it's too late to fix this building with solid foundations, plenty of light public stairways and elevators to all floors?

Cannot—will not—the producers of gas join with the pipeliners, manufacturers, and distributors to save and protect this house before the foundations fail—*Before the roof falls in?*

[While we have lampooned and enlarged upon some of the situations inherent in our household, we are proud of the Gas Industry. With teamwork and determination we will continue to build this all important Industry to even greater heights. Without this teamwork we might find that no apology is needed for the overdrawn picture. —H. H.]

Editorial:

Just What Is The Gas Industry?

THERE will be some, maybe many, who will view with scant tolerance a relative-newcomer's question: Just what is the gas industry?

That will seem to them a question that is impertinent, naïve, utterly stupid or too-smart.

There remains, however, a persistent impression that thorough consideration of that relative-newcomer's question should produce thoughtful discussion leading to a new view of the potentials of real solidarity—*solidity*—in the gas industry.

There was a time, gone and never to return, when the gas utilities were the gas industry.

Manufacturers produced stoves, water heaters and utility operating equipment. Those stoves, water heaters and equipment were sold and used anywhere that gas was made and distributed. The competition was strictly intramural. Electric ranges and water heaters either did not exist or they were a cloud the size of a man's hand on a far horizon. The manufacturers were their own industry.

Since then, many things—big things—have happened. But the gas industry has not been redefined. The old definition has been retained by some; others have vague impressions that do not encompass all that has happened. Still others seem to prefer to just whistle loudly as they walk quickly past the graveyard of old stoves and old techniques.

So—just what is the gas industry?

The vast changes in techniques, utilization and economics—big things that have happened—involve innumerable factors, companies, company-categories and category-associations. It is certainly a simple fact that the big things, in themselves, are broadly-beneficial, and a mighty demonstration of American industrial accomplishment. But—that hand-sized cloud on the horizon has become a huge thunderhead, in the meanwhile.

Now, no longer *the* gas industry, utilities are becoming more-and-more dependent upon pipelines for their very existence. And, their equipment purchases include the costly-but-essential service insurance of standby plants.

Appliance manufacturers live, produce and sell in an atmosphere of intense external competition.

Pipeline transmission of natural gas throughout the Nation has become a powerful economic factor—it is even referred to as the gas pipeline *industry*.

The producers, however remote from the utilities, are a potent factor that cannot be ignored.

Off-the-mains gas, LP gas delivered to practically any remote cottage and to industry, certainly is one of the big things that has happened. For some reason, difficult to understand, there seems to be some tendency not to regard this fuel as gas.

Now, as compared with the past, there is a plethora of associations concerned with general and specific interests: utilities, national and regional; pipelines; producers; manufacturers, appliance and equipment; and the LP group. Divisions, sections and departments in some of the associations are, in practice, virtually separate associations.

Distributing utilities . . . appliance manufacturers . . . other utilization equipment manufacturers . . . transmission and distribution equipment manufacturers . . . transmission pipeline companies . . . underground storage companies . . . natural gas producers . . . natural gas processors . . . LP gas distributors . . . associations: national and regional . . . associations: utility, pipeline, manufacturers, producers and LP.

Those seem to be the major elements from which a modern definition of GAS INDUSTRY could be formulated. Those seem to be the elements of an answer to: Just what is the gas industry?

As is usual when operations and techniques become more complex, the answer is very apt to be complex. But, the viewpoint in giving the answer and in comprehending it need not be complex.

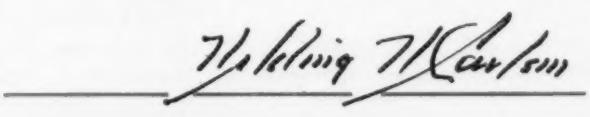
If those really are the major elements that make up the gas industry, a true interpretation and the mutual practice of the all-for-one-and-one-for-all doctrine would contribute much to a forceful redefinition of the gas industry—a fully-constituted gas industry, a fully-unified gas industry and a fully-determined gas industry.

A lot of wordage has been written and mouthed on gas industry unity-for-action. Some of it has come out as rather fancy phrasing and ringing oratory. All of it has carried high individual conviction—not matched by convictions of others who have much to gain—or lose.

If the gas industry really is of the magnitude envisioned here, then it has vast and unexploited action-potentials that could be brought to bear with high effectiveness—for the *entire* gas industry.

Coordination—always a fearsome word—rises rapidly to the top in such a consideration of the gas industry. However, if all elements are to be represented, then none should dominate. Coordination in this case is *not* domination!

Far from implying the need for another association—with conventions and all such—the character of this straight-across-the-*entire*-gas industry coordination is that of a council—The Gas Industry Council.



Southern Gas Association's 46th Annual Convention Under Way In Houston

WHEN President H. K. Griffin bangs his gavel in Houston, the 46th annual convention of Southern Gas Association will be under way with a well-rounded program that was designed to more-than-meet the wishes and requirements of the delegates for a useful and beneficial meeting. The important considerations of the Southern gas industry are on the program, with authorities from all parts of the country on hand to participate in the presentations and discussions.

Registrations indicate that approximately 2,000 delegates, visitors and their ladies will be on hand for the 3 days of interest, information and fun.

In line with big things in the South, particularly in the host-state, two hotels will be used to accommodate the sessions and SGA will run a bus line between the two.

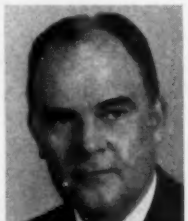
In addition to the General sessions, the program includes a number of topics under each of 6 other sessions: Accounting, Employee Relations, Distribution, Accident Prevention, Sales and Transmission. In all, there are 45 topics that will be presented individually, as panel discussions, symposiums and as dramatized "productions." Typical of the Southern emphasis on sales considerations, those sessions have been divided to serve specialized interests in general, residential and industrial fields.

The Manufacturers' Friendship Room is going to be as big as all outdoors, this year, because even a Texas-size room can't hold it. Complete with a water ballet team, it will be around the swimming pool at The Shamrock.

Dione Lucas, the gas industry's television start—she does that convincing job of showing the prospects of the gas industry how-to-do-it—will be on hand to demonstrate for the Southern gas industry how she handles a strudle when she is under the lights and the cameras are rolling.

A look at the legislative world will be presented by Francis X. Welch, editor, *Public Utilities Fortnightly*. And Dr. Watrous H. Irons, president, Federal Reserve Bank of Dallas, will run through the economic situation as he sees it.

Curtis M. Smith, vice-president, Tennessee Gas Transmission Co., is chairman of the general convention committee that has made the extensive plans for the 46th gathering of the Southern industry. At SGA headquarters in Dallas, they say, "it's easy to pick adjectives that will describe the Convention. Just deal in superlatives, and you've got it!"



Curtis M. Smith

SGA CONVENTION HEADQUARTERS

The Rice Hotel

The Shamrock

Greetings to SGA from Federal Power Commission

THE problems which are before the natural gas industry today are of more than regional importance. The tremendous extension of interstate pipe lines and the service of natural gas in almost all sections of the Nation have made its production and transportation a matter of economic concern to large groups of consumers. The Federal Power Commission fully appreciates the great need for consumers everywhere to receive, for as many years as possible, adequate quantities of gas at just and reasonable rates. It is our hope that the 46th Annual Convention of the Southern Gas Association will contribute to the attainment of this objective.

JEROME K. KUYKENDALL
Chairman
Federal Power Commission

Greetings to SGA from Texas Commission

THE Texas Railroad Commission extends hearty greetings to the officers, directors and members of the Southern Gas Association on the occasion of its 46th Annual Convention in Houston, 1954. Your efforts to serve your patrons with clean, convenient natural gas helps conservation officials in our work to prevent physical waste of the irreplaceable natural resource. A good price for gas at the wellhead assures the consumers an adequate and dependable supply.

ERNEST O. THOMPSON
Chairman
Texas Railroad Commission

Greetings to SGA from Mississippi Commission

IT is my distinct privilege and pleasure to extend sincere greetings to each and every person attending the 46th Annual Convention of the Southern Gas Association. May your visit together in Houston be one that brings about closer friendship and coordinating accomplishments in your business endeavor.

ALTON MASSEY
Chairman
Mississippi Public Service Commission

THE 14-STATE AREA OF SOUTHERN GAS ASSOCIATION

SGA Closes Active Year and Moves Toward New Heights

by H. K. Griffin

Vice-President
Mississippi Valley Gas Company

President
Southern Gas Association

THE Southern Gas Association year just closing, to be climaxed by the Annual Convention in Houston, has been a very successful one. Its regular program has reached new heights of effectiveness. Some new activities have been initiated that hold promise of being very beneficial to the gas industry in the 14-state area covered by the Association.

Our Association program revolves around 5 sections: Accounting, Employee Relations, Distribution, Sales and Transmission. One of the major activities of the Association, carried on by these 5 sections, is a number of round-table conferences conducted by each section for informal discussions of common problems. The evidence is so conclusive as to the value of these conferences that the program is now accepted in the Association as one of the most valuable activities that could be devised. Meeting schedules have been worked out to minimize the time and travel required and as a result this conference program has the unqualified support of company executives.

What is believed will be an especially valuable activity has been a pulsation research investigation carried on over the past 18 months by a special committee of the Transmission Section. The problem investigated was that of the pulsation produced by reciprocating-type engines in compressor stations. This pulsation results in loss of power, numerous mechanical problems due to vibration and difficulty in obtaining accurate meter measurements. One of the principal objectives has been the development of an analog computer to analyze the pulsation in compressor station piping. Such a computer will be demonstrated at the Houston Convention and there is promise that the coming year will produce some new answers to the problem of combatting pulsation.

Southern Gas Association has always been interested in educational activities for the benefit of member-company employees and for several years has sponsored short courses in gas technology at Texas A. & I. and in gas appliances at the University of Tulsa.

This year, plans have been made to sponsor a new course in management to train individuals to become better managers by giving them a broader understanding of the fundamentals of management in the gas industry. It will be tailored specifically to meet the indus-

OFFICERS AND MANAGING DIRECTOR OF SGA—1953-1954

H. K. Griffin
President

Charles I. Wall
1st Vice-President

J. H. Collins, Sr.
2d Vice-President

Robert R. Suttle
Managing Director

try's needs with an outstanding corps of instructors selected from sources throughout the South. The course will begin August 1, at Texas A. & I., Kingsville, Texas. It will last two weeks and attendance will be limited to 40 to permit a careful analysis subsequently to determine whether the course should be continued. There is a rather widespread feeling that this may well develop into the most valuable educational effort ever undertaken by the Association.

At last year's Convention our members were given a preview of the industry's film, "Natural Gas," just completed after several years of careful consideration and study. During the past year, it was made available to gas companies everywhere and our belief that this project was worthwhile is borne out by the sale during the year of 57 prints to companies throughout the United States and Canada. This film is available through Southern Gas Association headquarters and is supplied with the purchasing company's personalized trailer.

As is common throughout the industry, our company sales departments are extremely conscious of the necessity of promoting the sale of gas. The Sales Section has just completed plans for the periodic publication of a bulletin to be distributed to all member-companies. It will contain condensed descriptions of successful sales promotion programs developed by the individual companies. Thus, our entire company membership will have the benefit of the promotional work being undertaken by all the individual companies.

Two years of work has resulted in the completion of the gas appliance installation code for the Southern Building Code Conference. At the request of the Conference, this code was compiled by a special committee of Southern Gas Association. A committee of 5 will become a permanent part of the Conference with the responsibility of keeping the Code up-to-date.

During the year the Safety group in the Employee Relations Section has been giving special attention to the preparation of slide films depicting safety procedures in certain operations. One on "High Pressure Hot Taps" has been completed and one on meter shop practices is in production. Several others are projected.

In Southern Gas Association, we have a group known as the "Advisory Council," composed of one top executive from each member-company. This group meets twice a year, but its principal meeting is held in December for a 3-day discussion of pressing industry problems. The programs always include leaders from outside the industry as well as our own territory and the value of this "off-the-record" meeting is growing each year. It has been a very effective instrument for promoting inter-company consideration of the situations that prevail in our area.

Southern Gas Association is enjoying continued growth, both in individual and company memberships, and consequently is able to expand its service activities to its membership. It is not interested in growth simply to become larger, but rather in a sincere effort to become of more value to its members. Every proposed new activity is carefully considered before it is undertaken. The fundamental consideration in the Association is that everything it does must be of sufficient value to the membership to fully warrant the time, effort and expense required.

As long as this yardstick is adhered to, Southern Gas Association will continue to meet its obligations to its members.

SGA COMPANY MEMBERSHIP

GAS COMPANY members are from 16 states:

Alabama	4
Arkansas	3
Georgia	3
Illinois	1
Kentucky	2
Louisiana	11
Michigan	1
Mississippi	2
Missouri	1
Nebraska	1
New Mexico	1
North Carolina	1
Oklahoma	7
Tennessee	5
Texas	23
Virginia	1
Total	67

MANUFACTURER-DISTRIBUTOR companies are from 26 states:

Alabama	3
Arkansas	1
California	15
Colorado	1
Connecticut	2
Georgia	3
Illinois	12
Indiana	7
Iowa	1
Kansas	3
Kentucky	4
Louisiana	9
Massachusetts	2
Michigan	5
Minnesota	2
Mississippi	1
Missouri	6
New Jersey	2
New York	7
North Carolina	1
Ohio	13
Oklahoma	8
Pennsylvania	13
Tennessee	5
Texas	38
Wisconsin	3
Total	167

SOUTHERN GAS ASSOCIATION—1953-1954

OFFICERS

PRESIDENT: H. K. Griffin, Mississippi Valley Gas Co., Meridian, Miss.

1ST VICE-PRESIDENT: C. I. Wall, Pioneer Natural Gas Co., Lubbock, Tex.

2D VICE-PRESIDENT: J. H. Collins, Sr., New Orleans Public Service, Inc.

TREASURER: H. V. McConkey, Southern Union Gas Co., Dallas.

SECRETARY: Earl J. Newlin, State Fuel Supply Co., Oklahoma City.

ASSISTANT SECRETARY: Kyle H. Turner, Atlanta Gas Light Co.

MANAGING DIRECTOR: Robert R. Suttle, Dallas.

DIRECTORS

Carl E. Cloud, MidSouth Gas Co., Little Rock, Ark.

D. A. Crawford, Atlanta Gas Light Co.

E. R. Cunningham, Texas Eastern Transmission Corp., Shreveport, La.

James A. Davis, Empire Southern Gas Co., Fort Worth.

Buell G. Duncan, Piedmont Natural Gas Co., Inc., Charlotte, N. C.

E. L. Henderson, United Gas Corp., Shreveport, La.

Ernest G. Hotze, Clark Bros. Co. division, Dresser Industries, Inc., Houston.

Charley Lockhart, Jr., Bryant Heater division, A.G.E., Inc., Dallas.

William D. Mastin, Robertshaw-Fulton Controls Co., Chattanooga, Tenn.

Charles K. Oxford, Gas Light Company of Columbus (Ga.).

C. L. Perkins, El Paso Natural Gas Co.

R. A. Puryear, Jr., Alabama Gas Corp., Birmingham.

H. C. Webb, Oklahoma Natural Gas Co., Tulsa.

Willard G. Wiegel, Lone Star Gas Co., Dallas.

ADVISORY COUNCIL

CHAIRMAN: J. C. Flanagan, United Gas Corp., Houston.

VICE-CHAIRMAN: Hansell Hillyer, South Atlantic Gas Co., Savannah.

SECTION CHAIRMEN

ACCOUNTING: Harold G. Gray, Empire Southern Gas Co., Fort Worth.

DISTRIBUTION: Joe C. Darrow, Lone Star Gas Co., Fort Worth.

EMPLOYEE RELATIONS: Kenneth Fellows, Houston Natural Gas Corp.

SALES: L. J. Fretwell, Oklahoma Natural Gas Co., Tulsa.

TRANSMISSION: O. W. Clark, Southern Natural Gas Co., Birmingham.

COMMITTEE CHAIRMEN

CONVENTION: Curtis M. Smith, Tennessee Gas Transmission Co., Houston.

MEMBERSHIP: C. I. Wall, Pioneer Natural Gas Co., Lubbock, Tex.

Aerial view of portion of Houston's business section

Photo Houston Chamber of Commerce

Houston: A-Boomin' for 118 Years

IT SEEMS that there were two brothers, Gus and John, who were known more formally—and those occasions were few—as Augustus C. and John K. Allen.

Well, back in August of 1836 these two brothers moved in right after Sam Houston went off to rest from his battling at San Jacinto. They moved in and bought themselves some land and figured that they might have a good thing. Some of this real estate came to the Allens in the simple exchange of one buck for one acre—and they bought themselves a lot of acres.

And, they figured, they'd have a timely sales gimmick if they called the place Houston. So that's what they called it.

Then they started selling. The good-and-timely sales gimmick worked: they sold off at $435 for one acre and that adds pretty good, in dollars or percent.

That did it! Something like that has been going on ever since. Not long ago, a piece went from the party-of-the-first-part to the party-of-the-second-part at the rate of $2,000 a street-inch. That's *inch*, not foot. Percentages just don't matter there.

What the Allens started, a lot of other people have carried on. From that speculative beginning, by and with a handful of hardy souls, Houston now stands 14th in the list of cities of the United States. Until 1930, Houston's population tripled every 20 years; since 1930 it has doubled and it still is getting larger day-by-day.

While Houston is, unquestionably, one of the gas industry's focal points, it also has the great economic advantage of wide industrial diversification.

Civic and cultural considerations are given emphatic attention in Houston. The city's recreational, educational, health, musical, theatrical and historical facilities are accorded high national regard.

Indeed, if Gus and John were around now, they'd be sure to brag on Houston —and that's as it should be.

"But Houstonians aren't resting on their oars to admire the progress they've made," the Chamber of Commerce tells us. "They maintain what some call a 'Northern' pace. . . ."

That *last* just plain jolted us! So may we just mention that Southern Gas Association's 1954 Convention is at Dan and Gus' Place—Houston, that is.

Southern Union Gas Company Uses New Device For Finding and Locating Gas Leaks

by William V. Gilpin
Distribution Superintendent
Southern Union Gas Company
Albuquerque, New Mexico

FOR many years, it has been the practice of this company to test gas service lines for possible leaks by applying air pressure to the line and using a mercury manometer or pressure gauge attached to indicate the pressure imposed on the piping. Watching the gauge or manometer has been a slow and time consuming method for the service crews. If some satisfactory and quick method for indicating leaks could be developed, it would be a saving to our company.

William V. Gilpin

In spite of the fact that many service crews have been added to our Albuquerque organization, these trained people have all they can do. With this in mind, we started an experiment which finally, in 1953, developed a successful bubble-type leak detector.

The original leak detectors were improvised from what was originally a weed-burning apparatus. To this weed burner was added an indicating pressure gauge, a glass bubble jar and a rather cumbersome and complicated piping system, involving a bypass. While crude in its original form, several of these were made and used with excellent results. We found that it was possible to pump up a gas service line to 15 pounds of pressure and, within a matter of minutes, we could observe the bubble jar and quickly determine whether or not there was a leak in the piping system. If there were bubbles, the crew immediately looked for leaks; if no bubbles appeared, they were assured the piping was tight.

The arrangement of the original leak detector was brought to the attention of the personnel of other Southern Union properties, who were anxious to try the device.

Because Southern Union Gas Company is in the gas business and not in the manufacturing business, it was suggested to Fred D. Bradley, purchasing agent, and N. P. Chestnutt, chief engineer, that they locate a manufacturer who would be interested in developing our original idea and design into an apparatus that could be supplied to our firm and offered to the gas industry generally.

Universal Controls Corporation, Dallas, discussed the possibilities with Mr. Bradley and Mr. Chestnutt. Subsequently, they developed the Dragnet Leak Detector.

Construction

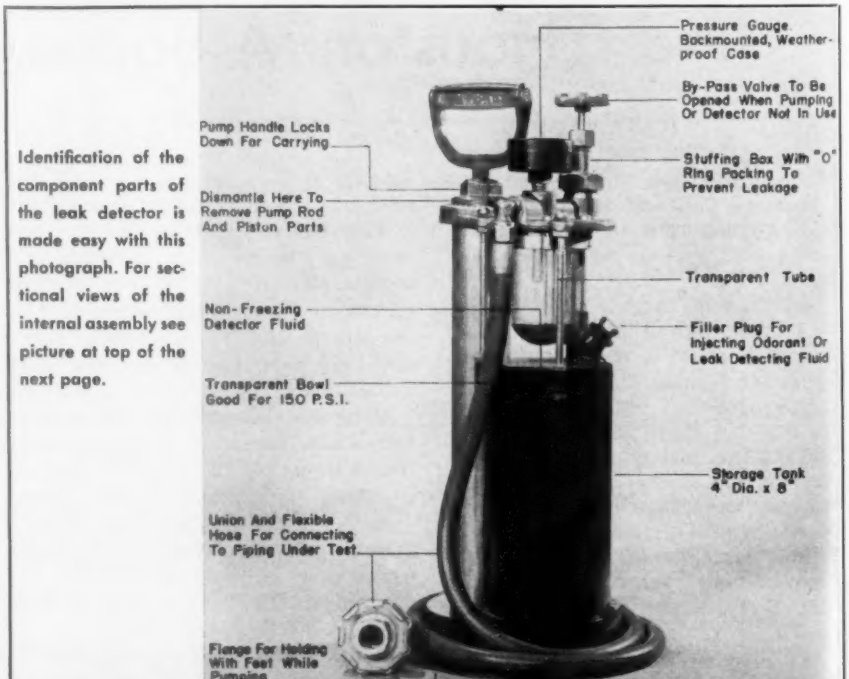
The production model of the leak detector unit includes several components, all combined into one compact unit which eliminates many of the objectionable features of our original homemade devices.

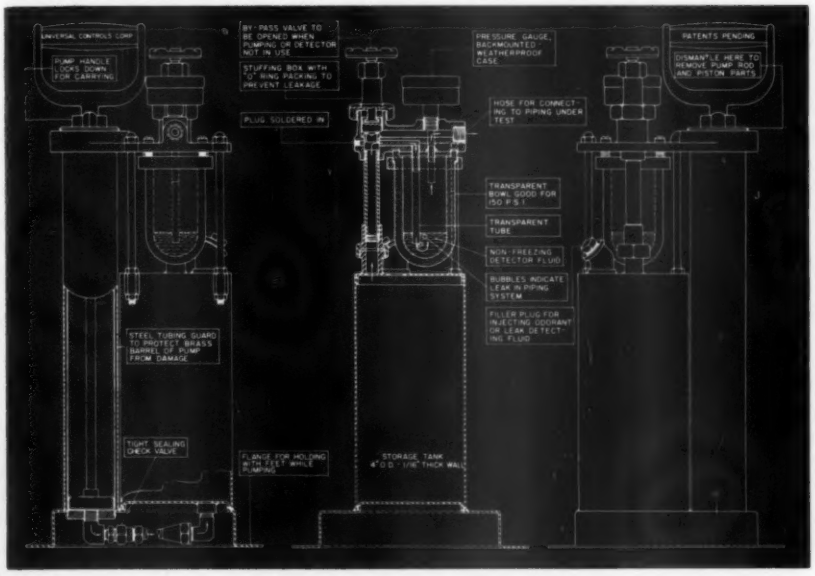
It has a test pump for applying air pressure to the Dragnet unit and to the piping under test. The handle of the pump locks down when not in use, to become a convenient means of carrying the device, weighing about 15 pounds. A flanged base serves as a support for the apparatus and for the operator to hold the unit down with his feet during the pumping operation. A storage tank, with a diameter of 4″ and a length of 9″, receives the discharge air from the pump. Between the pump and the storage tank is a special positive-seating check valve with stainless steel ball valve and Hycar rubber seat which prevents any backflow or leakage from the tank to the pump cylinder.

Mounted above the tank is a bronze casting which serves as a support for the upper end of the pump and, beneath it, a mounting support for the transparent bubble jar. In this casting are a number of passageways and openings which take the place of the rather complicated piping system on the original experimental unit. This casting also supports the back-mounted indicating gauge, the hand-operated bypass valve and the flexible pressure hose which is connected to the piping under test.

By means of a connecting union and nipple, air from the storage tank passes up to the bypass valve with the air flowing directly to the hose and piping when the bypass valve is open. The bypass valve stuffing box is packed with "O" ring packing and lubricated with silicon grease to prevent any leakage from the stuffing box.

From the illustrations it will be noted that there is a transparent glass dip tube


Identification of the component parts of the leak detector is made easy with this photograph. For sectional views of the internal assembly see picture at top of the next page.
Pressure Gauge Backmounted, Weather-proof Case
By-Pass Valve To Be Opened When Pumping Or Detector Not In Use
Pump Handle Locks Down For Carrying
Stuffing Box With "O" Ring Packing To Prevent Leakage
Dismantle Here To Remove Pump Rod And Piston Parts
Transparent Tube
Non-Freezing Detector Fluid
Filler Plug For Injecting Odorant Or Leak Detecting Fluid
Transparent Bowl Good For 150 P.S.I.
Storage Tank 4" Dia. x 8"
Union And Flexible Hose For Connecting To Piping Under Test
Flange For Holding With Feet While Pumping


UNIVERSAL CONTROLS CORP.
PUMP HANDLE LOCK DOWN FOR CARRYING
BY-PASS VALVE TO BE OPENED WHEN PUMPING OR DETECTOR NOT IN USE
STUFFING BOX WITH "O" RING PACKING TO PREVENT LEAKAGE
PLUG SOLDERED IN
PRESSURE GAUGE, BACKMOUNTED WEATHERPROOF CASE
PATENTS PENDING
DISMANTLE HERE TO REMOVE PUMP ROD AND PISTON PARTS
HOSE FOR CONNECTING TO PIPING UNDER TEST
TRANSPARENT BOWL GOOD FOR 150 P.S.I.
TRANSPARENT TUBE
NON-FREEZING DETECTOR FLUID
BUBBLES INDICATE LEAK IN PIPING SYSTEM
FILLER PLUG FOR INJECTING ODORANT OR LEAK DETECTING FLUID
STEEL TUBING GUARD TO PROTECT BRASS BARREL OF PUMP FROM DAMAGE
TIGHT SEALING CHECK VALVE
FLANGE FOR HOLDING WITH FEET WHILE PUMPING
STORAGE TANK 4" O.D. - 1/8" THICK WALL

Sectional views showing internal assembly.

extending down to and inside the bubble bowl, where its lower end is immersed about ¼" in fluid. The fluid is Prestone, so that it will not freeze when Dragnet is used in a cold climate. A second and shorter tube also extends into the bubble bowl. It serves to carry air from the inside of the bowl and out to the flexible hose and piping under test. This, too, is made long enough so that if the test unit is upset, or even turned upside down, none of the liquid can escape.

Method of using leak detector

When the piping is ready for test, the flexible hose and pipe union at its outer end are connected to the piping by suitable fittings, making sure that all joints are pulled up tightly. The bypass valve is always open during the time the Dragnet unit and piping system are pumped up by the hand pump. This bypass valve is open to avoid forcing the air to the piping system through the bubble apparatus. Usually, on service lines, a pressure of 15 pounds is applied by observing the indicating gauge. Higher or lower pressures may be used, depending upon the conditions of the piping or apparatus being tested for leaks. The unit will detect leaks if only ounces of pressure are used.

After attaining this pressure, the pump handle is locked down and a few moments allowed for temperature equalization, because the air temperature in the storage tank will rise slightly. As soon as this temperature has equalized, the bypass valve is closed, thus making it necessary for any air flowing from the storage tank out through the hose and to the piping system, to pass down through the dip tube and bubble in the bubble jar.

If there is a leak in the piping system, this will reduce the pressure there while the pressure in the storage tank will remain at its full value. As soon as the pressure on the piping system has dropped by ¼"-to-½" water column less than the pressure in the storage tank, bubbles will begin to appear in the bubble jar. These bubbles will continue as long as the leak is present.

Lack of bubbles instantly indicates a tight piping system with full assurance that no leaks are present. This leak detector will instantly indicate the tiniest of leaks and, therefore, calls for better workmanship in making up pipe joints, whether welded, threaded or soldered.

It has been calculated that a leak creating one bubble per second in the bubble jar, at 15 pounds pressure on the piping system, represents a tiny leak, causing the loss of only one cubic foot of free air or gas in 15 hours of elapsed time.

On larger piping systems and mains, where it is impractical to pump up the large volume with the small-capacity hand test pump, an air compressor can be used with the Dragnet leak detector connected to the pipe under test as an appendix, using the flexible hose for this purpose. During the pumping operation, the bypass valve should be open in order to allow the air pressure from the compressor to flow back into the Dragnet storage tank. After the compressor is cut off, the bypass valve is closed again, in the manner just described, to indicate possible leaks on this bigger piping system. The Dragnet unit has been designed for a maximum working pressure of 200 pounds so that higher pressures as commonly applied with the compressor will not damage the detector unit.

Halide method of locating leaks

From the foregoing description, it will at once be observed that the Dragnet unit will only indicate that a leak is present and that it is still necessary to find the leak. The usual method is to search for the leak with soap suds, but this can sometimes be done more quickly by using a halide lamp. Such halide lamps are commonly used by refrigeration service people for locating the leaks of freon from refrigeration piping. These lamps are not safe to use where combustible gas is present, but they are a quick means of locating leaks when the piping system is under test with air. The portable halide lamp is obtainable from a refrigeration supply store or from several manufacturers of acetylene welding apparatus. These lamps may use any of several kinds of fuel, including acetylene, gasoline, alcohol, propane or even manufactured or natural gas.

A filler plug, at the top of the storage tank of the leak detector unit, allows for pouring a liquid chemical into the storage tank. A leak detecting chemical such as methyl chloride, carbon tetrachloride, carrene, or any other chemical of suitable nature containing one of the four halogen elements of chlorine, bromine, flourine, or iodine may be used. It is obvious that when the system is pumped up using the hand pump, the air bubbling through the chemical at the bottom of the storage tank will carry some of this chemical vapor out into the piping system. Then when the halide lamp is used with a sniffer tube at the joint, any slight traces of the chemical picked up by the sniffer tube will instantly cause the halide lamp to burn a bright, bluish-green flame, indicating a leak at that joint.

Varied uses of leak detector

Besides using the Dragnet unit for indicating leaks on gas service lines and gas piping, there are innumerable other uses to which it can be applied with accurate and time-saving results. These include testing air, steam, water and chemical piping, radiant heating systems, gas ranges, chemical or laboratory apparatus, pressure vessels, aircraft piping systems, control instrument systems, hydraulic brake systems and others.

Conclusion

Our experiences at Albuquerque, both with our developmental model of the leak detectors and the production model of the Dragnet unit, have conclusively convinced us of very appreciable savings in our labor and truck time by the use of these devices. Furthermore, we feel that a better piping job is obtained when the contractors or service men know their work will be checked by this method. City inspectors who have seen this bubble method for detecting leaks have given it their unqualified approval.

Tampa Gas Co Installs New Wrinkle to

by Lawrence C. Jewett
Secretary-Treasurer
The Tampa Gas Company

Lawrence C. Jewett

CUSTOMER service today probably is one of the most widely discussed subjects in the gas industry. We feel that this uniform interest is attributable to a general realization that the quality of the service the customer receives and the kind of treatment the customer is accorded while transacting business with us ultimately determines what the public thinks about us—the gas company. Or, to put it another way, what the public thinks about the gas company is, to a great extent an enlarged reflection of what the individual customer thinks. This opinion, therefore, is the focal point for developing good or preventing bad customer relations—it is very important to us and our success as a gas company and obviously it must be influenced and guided by us in the every day dealings with our customers. The level of our customer relations effort must be raised; our daily routines, policies and ways of doing business must be such that they result in complete customer satisfaction.

Good relations then are caused, they do not just happen. While many factors contribute to the ultimate attainment of good relations, they usually stem from one or more of the following basic conditions:

1. The furnishing of a dependable flow of gas service adapted to the needs, convenience and desires of the customer. It must be right technically.
2. A fair price for service design to encourage greater use of gas, greater satisfaction with gas and a fair profit to compensate for the plant investment, cost of gas and investor's risk. It must be right economically.
3. The adoption of policies and procedures which are compatible with what the average customer expects, wants and believes he is entitled to receive in the way of service, from the time his gas is applied for and turned on, until it is turned off.

No one questions the fact that the gas company must supply a service that is both technically right and economically right. They are each essential to good customer relations.

Now, just what does the customer feel that he wants in addition to a dependable flow of gas at a cost that fits his pocketbook. The answer to this question is courteous, efficient, fair and indiscriminate treatment, the same kind of prompt and personalized service that he receives at the grocery store or the filling station. This is the kind of treatment that obtains his business and then retains it. We might call this good will. Unquestionably, it is one of our most valuable assets even though it does not appear on our balance sheet. It is the backbone of our company and as employees, to our job security.

This prompt and personalized service invariably requires the adoption of policies and paper work requisites that make it easy for the customer to transact business with us. Moreover, we must employ capable people who know their jobs and make the customer feel as if he were a guest in their homes in all dealings with him, whether in person or by phone. Most people are in a hurry, they resent waiting or delay while transacting business when it is obviously caused by inefficiency or outmoded methods, and frequently they become exasperated and sometimes indignant at a failure to handle their business promptly. People like good service and the dignity and fun of doing business that goes with it. To achieve this "let's not waste a second" service, that all of the foregoing proposes, requires:

1. The installation of modern equipment and facilities adequate to meet the requirements of the customer.
2. The adoption of clearly spelled out policies, the formulation of procedures and paper work routines and flow which assure a fast and well coordinated operation, convenient for the customer and protective to the company's interest.
3. A trained group of employees.

In harmony with this general theme of improving service to the customer and at the same time reducing operating costs, we recently installed a new customer history record designed for use in a visible file and we concurrently streamlined and modernized the related paper work.

To visualize the ultimate effect of the new record and the attendant procedural changes, let's first look briefly at what we had, or, what we did not have, before we installed the new record. We did not have a form of continuous contract nor an alphabetical index of the active customers on our lines. Furthermore, we did not have a continuous record of a particular customer's past service with us, nor did we have a history of the customer's credit, including paying habits and a bad debt record. Our ledger for customers' deposits was arranged alphabetically but numerically within a particular letter and in the absence of a complete index of customers, this was not very conducive to the expeditious handling of a contact with a customer which required reference to the deposit or the statement of final settlement, either in person or by

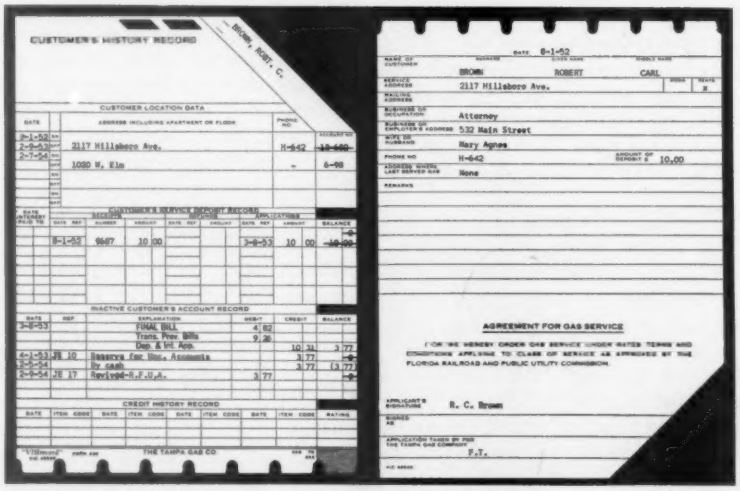


Figure 1. Customer's history record card, front and back, with specimen entries.

telephone. Finally, the accounts of those customers who had discontinued the use of gas and had failed to pay the final amount owed after applying the service deposit were carried alphabetically, but not alphabetically within a particular letter, nor within one ledger, consequently reference to this record was exceedingly slow.

Under the old system both the lack of vital records and the maintenance of several separate and distinct records was costly and time consuming. Under the new system these objections are eliminated—the customer's history record card combines into one form:

a) a continuous contract with the customer
b) customer's index card
c) a credit history for the customer
d) a ledger sheet for the customer's service deposit
e) a ledger sheet for the customer's gas service account when service is disconnected
f) a chronological and continuous record of the customer's service showing current location and account number
g) a bad debt record for the customer.

This new record in its complete form serves as an alphabetical index of our customers, it is the source of the customer's account number, the customer's current service location, and gives a chronological record of the customer's service with the company. It is both the formal customer's deposit ledger and customers' inactive account ledger and it is the customer's credit record.

Before discussing in full detail the various uses which this record serves, next let us briefly describe the design of the new form and explain how simple it really is in its practical application. Figure 1 shows the design of both the front and back of the card with typical entries.

This form is 6″×8″ card printed green on buff stock and is for use in a visible margin type of filing equipment.

This card has a ¾″ visible margin. At the top this margin is diagonal and the customer's name is typed therein. There is no typing complexity. On the right side, this margin is vertical and it houses the customer's account number, the amount of the customer's service deposit, the amount of any unpaid balance for gas service where the customer has discontinued and gas service is no longer furnished, and the codification assigned denoting the customer's credit rating. For filing, these cards are arranged in strictly alphabetical order, in rows of 18 cards each, with each row having a maximum capacity of 25 cards which allows for an overall expansion of 30%. While we do not contemplate changing the present filing arrangement, there is no apparent reason why the individual cards could not be codified and then filed phonetically. We mention this only for the reason that many companies are now filing records of this nature in phonetic order.

These cards are housed in a portable cabinet on rollers which can be wheeled to any point in the office where needed. Figure 2 presents a picture of this new equipment, giving an idea of the size of the cabinets and the physical layout of our particular installation.

The fact that the margin on this card is visible when placed in the file, in its practical application, means that the customer's name, the account number, amount of the deposit, the amount of any inactive account, and the credit rating are visible on not one but 18 cards at one time. Obviously this feature speeds up reference when looking for a particular name and its related account number, and it likewise very substantially speeds up adding and balancing the customers' service deposit ledger and the inactive customers' service account ledger to have 18 amounts visible at one time, so the amount on each card may be added without touching, leafing or removing the card. The fact that all of the cards in a row are turned or leafed at one time rather than individually is also a time saver.

This card is hand posted and is so designed that when it is physically removed from the file, it is automatically signalled on the horizontol margin that the card is missing and shows where the card is to be replaced. Moreover, no card can be misfiled when once set up as permanent in the regular file.

(Continued on page 50)

Figure 2. The cabinets and working area.

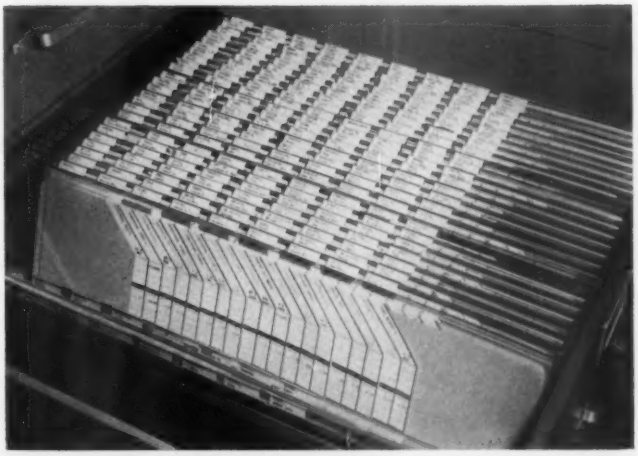


Figure 3. Open drawer showing panorama of the record.

Natural Gas Educational and Research

by Frank H. Dotterweich
Director, Division of Engineering
Texas College of Arts and Industries

THE program at Texas College of Arts and Industries, initiated in September 1935, by a group of men who, at that early date, foresaw the phenomenal growth of the natural gas industry, has been expanded to include a management development course designed and sponsored by Southern Gas Association.

The natural gas industry's present program at Texas A & I College now includes, (1) undergraduate work toward the Bachelor of Science degree, (2) graduate work toward the Master of Science degree, (3) sponsored research work, (4) the SGA short course in gas technology and (5) SGA management development program.

The various stages in the development of these programs have been reported in AMERICAN GAS JOURNAL: "A Natural Gas Engineering School in Nature's Laboratory," May 1940; "Trained Engineers for an Expanding Natural Gas Industry," May 1948; and "Specialized Engineers for the Natural Gas Industry," September 1952.

The initial work in natural gas engineering was planned and carried out by an industry committee, led by Frank C. Smith, president, Houston Natural Gas Corporation, and a member of the board of directors, Texas College of Arts and Industries. Men who worked closely with Mr. Smith in the early phases of this program and are presently active are Chester L. May, vice president, Lone Star Gas Company and N. C. McGowen, president, United Gas Corporation. As the course developed, others who gave of their time and help are John F. Lynch, president of the board of directors of the College and president, La Gloria Corporation; Fred Fues, vice president, The Chicago Corporation; and Gardiner Symonds, president, Tennessee Gas Transmission Company. Through their outstanding efforts, the college has acquired the most complete natural gas engineering laboratory in the country.

Robert R. Suttle, managing director, SGA, working closely with members of the association, introduced a short course in gas technology, in 1946, now in its ninth successful year of presentation. Likewise, he and others have foreseen the need for a management development program of special design for the transmission and distribution groups of the natural gas industry. It will be introduced this year. Mr. Suttle organized and leads a special industry committee through which the natural gas companies of the Southwest have made available to the College a complete all-year absorption air conditioning unit to be used for research study and to air condition the new $250,000 engineering building.

The selection of Texas A & I College for the natural gas program proved to be a location in the midst of the second largest natural gas field and one of the largest gas condensate fields in the country and with a high pressure gas condensate well on the campus. This location is unmatched for laboratory field studies. The campus of Texas A & I College is sufficiently removed from distracting influences of a large city to allow for quiet surroundings favorable to effective study. Conveniences and recreational facilities are available for relaxation in a pleasant environment with a mild climate throughout the year.

Undergraduate, graduate programs

The Bachelor's degree in petroleum and natural gas engineering requires the completion of 157 credit hours, taken over a period of 4½ years. The student may parallel this work and obtain a reserve officer's commission through the Reserve Officers' Training Corps of the College, activated in the fall of 1951.

A total of 214 graduates, as shown in the following table, have selected this work and obtained their degrees in petroleum and natural gas engineering without the help of any fellowships by the natural gas industry.

Year	*Graduates*
1938	9
1939	13
1940	12
1941	17
1942	9
1943	7
1944	3
1945	—
1946	2
1947	8
1948	16
1949	16
1950	35
1951	37
1952	15
1953	15
Total	214

These graduates have found employment throughout the United States and South America, being distributed equally in the employ of gas utilities, gas production companies and the chemical industry.

The enrollment in the Division of Engineering is presently 300 full-time students. This represents about 25% of the full-time coeducational enrollment at the College. Of the 300 engineers enrolled, one-half are majoring in petroleum and natural gas engineering. The enrollment in all sections of the Division of Engineering is increasing; the present enrollment doubles that of two years ago.

The graduate program, with a Master's degree in engineering in the field of natural gas engineering, was initiated in September, 1951. As graduate thesis work, the following projects have been completed and published:

1. Pilot plant study of the adsorptive properties of soils for natural gas odorants.
2. Laboratory study of the adsorptive properties of soils for natural gas odorants.
3. Research on the installation and operating characteristics of absorption air conditioning equipment.
4. A study of the subsurface water resources of the lower Gulf Coast region.

A portion of the new, completely air-conditioned Texas A & I Engineering building.

rchrograms Expand at Texas A & I College

5. An economic study of the distribution of natural gas in various locations in Mexico.

The graduate program presently includes the following research problems:

1. The use of natural gas as fuel for heating to prevent damage to citrus orchards by frost and freezing.
2. Maintenance problems in cooling tower operations in southwest Texas.

As the graduate work develops it will be limited to an active registration of about 10 graduate students, the present capacity of the Division of Engineering for advanced study. This method of industrial research offers the natural gas industry an excellent opportunity whereby its technical problems may be solved in the laboratory adjacent to gas production fields.

Faculty and courses

Frank H. Dotterweich, B.E., Ph.D., Professor and Director, lecturer in chemical engineering, natural gas processes, combustion engineering.

C. V. Mooney, B.S., M.E., Associate Professor, lecturer in petroleum and natural gas engineering, condensate and natural gas production, distribution and transmission, gas measurement and air conditioning.

Marcus M. Truitt, B.S., M.S., Assistant Professor, lecturer in physical and historical geology, stratigraphic and structural geology and fluid mechanics.

Emerson Korges, B.S., M.S., Associate Professor, lecturer in thermodynamics and heat engines.

John R. Guinn, B.S., M.S., Assistant Professor, lecturer in elements of electrical engineering and dynamics.

Paul Treptow, B.S., M.S., Instructor, lecturer in statics and strength of materials.

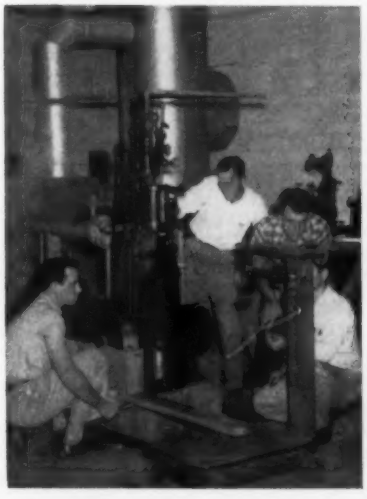
Ben P. Bailey, B.S., M.S., Associate Professor, lecturer in surveying, engineering drawing and descriptive geometry.

1954 research projects

1. Air Conditioning Refrigeration—Studies are being conducted toward the design and development of refrigeration units. Present laboratory tests include test-runs on absorption refrigeration units of 10- and 25-ton capacity. Other types of gas refrigeration units are in the stage of design and development.
2. Cooling Tower Design and Operation—Di Thermal natural draft cooling tower operation and design is under test and development. Additional studies are being conducted on maintenance problems in cooling tower operation.
3. Natural Gas Jet Compressors—In the throttling of high pressure natural gas to pipeline pressure, useful energy is wasted. Gas jet compressors utilize this throttling energy to aspirate and boost low-pressure field gas to pipeline pressure by the use of this high-pressure motive gas. A test unit is in the field for test and development work on a dually-completed gas well with high- and low-pressure natural gas.
4. Natural Gas Odorization—A continuing program of natural gas odorant evaluation is being conducted. Room tests are used with a procedure developed at Texas College of Arts and Industries to evaluate various commercial gas odorants.
5. A Study of the Subsurface Water Reserve of the Lower Gulf Coast Region—In many locations of this area, the limiting factor of industrial gas expansion is the availability of water. This work has made available the amount of subsurface water being withdrawn in the Kingsville-Bishop area and the rate at which it is being replaced. This work is being continued to include storage of surface water in subsurface sands by injection-well operations. Also a qualitative analysis of the water through the sand is now in progress.
6. Weather Observations with Radar—One SCR 545 radar outfit, the property of the Division of Engineering, is presently in Corpus Christi on loan to observe the approach of cold fronts and hurricanes. This unit, operated by the U. S. Weather Bureau, is a link in the weather protection program along the industrialized Gulf Coast and the project is sponsored by an industry cooperative committee.
7. Aluminum-Copper Connector Re-

(Continued on page 52)

Laboratory study of communications at Texas A & I.



Students at work in heat engines laboratory.

Laboratory study of an absorption refrigeration unit.

Emphasis on Year-'Round Air Conditioning Is Feature of Southern Construction

FOR the second year, F. W. Dodge Corporation has polled key members of its staff on questions linking construction and the use of gas in the 14 states of the Southern Gas Association area. The composite picture, since AMERICAN GAS JOURNAL published the report a year ago, is bright and so is the picture ahead.

To the question "During the last year what has happened in your area concerning the installation of all-year air conditioning?" The 11 Dodge staff men marked "More," rather than "Same" or "Down."

They were asked: "From your observations and conversations about your area, what do you believe to be the trend with respect to gas in competition with other fuels and electricity?" The trend, 10 responded, is that "Gas use is increasing," and only the Virginia observer reported that "Gas use is standing still." He said, "Shortage of gas supply in some areas of Virginia is retarding installations, which would probably increase with assured supply."

As to future use of gas, eight responded that "Gas use will not decrease." None indicated the opinion that gas will not increase. Three did not mark a choice.

Apart from the opinions of the staff men, the facts are that Dodge Reports of contract awards for future construction in the Southeastern region are terrific—well ahead of the gains shown by the total for the 37 Eastern states.

In that Southeastern area, the Dodge non-residential total for the first quarter is up 38% over the first quarter 1953; residential is up 15%; total construction is up 37%.

See the figures in the accompanying box for a more complete picture of construction prospects. The projects embraced in the totals will be in process of construction during the weeks and months ahead.

"From your conversations with all factors concerned with construction, what is the consensus for 1954, for your state?" Note that the question does not call upon the Dodge man to express his own opinion but, rather, the opinions of the people he talks with, day-by-day.

The answers were a choice of: "up," "same as 1953," and "down."

Virginia: Residential, same; non-residential, same.

Mississippi: Down in both categories.

South Carolina: Residential, down "a little"; non-residential, up.

Texas and New Mexico: Residential, down; non-residential, up.

Oklahoma: Up in both.

Arkansas, western area: Up in both.

Kentucky: Residential, same; non-residential, down "slightly."

Tennessee, western area, and eastern Arkansas: Residential, down; non-residential, same.

Georgia, Florida and Alabama: Same in both.

Louisiana: Residential, up; non-residential, down.

North Carolina: Up in both.

"If somebody asked you what is the most unusual feature of construction activity in your area, how would you answer?"

The replies were followed by additional comments.

VIRGINIA—by Thomas S. Phoebus, Richmond—*Map Area A*

The very sharp competition existing at this time for available projects, which seems out of proportion to the moderate decline in activity.

Air conditioning in commercial buildings is almost universal for new projects. Residential installations are increasing rapidly in percentage, though the volume is still low.

NORTH CAROLINA—by J. G. Bullock, Greensboro—*Map Area B*

The prospect of a large increase in educational and science buildings in North Carolina for the next two years with about $50,000,000 for each year expected. Also we expect a large increase in hospitals and institutional construction markets in the next two years.

We find the largest increase in all-year air conditioning is in the commercial, hos-

(Continued on page 37)

BUILDING IN THE SOUTHERN STATES
January-through-March—1952-1954
($000)

STATE	RESIDENTIAL			NON-RESIDENTIAL			TOTAL BUILDING		
	1954	*1953*	*1952*	*1954*	*1953*	*1952*	*1954*	*1953*	*1952*
Alabama	16,361	15,115	22,427	24,176	12,802	13,341	40,537	27,917	35,768
Arkansas	4,045	5,890	7,210	8,229	6,142	14,220	12,274	12,032	21,430
Florida	115,762	87,331	76,744	50,871	31,597	25,393	166,633	118,928	102,137
Georgia	29,177	36,394	38,815	54,392	42,108	30,165	83,569	78,502	68,980
Kentucky	19,601	28,611	18,447	31,033	17,261	8,916	50,634	45,872	27,363
Louisiana	26,411	25,102	30,160	22,487	23,130	77,851	48,898	48,232	108,011
Mississippi	4,625	5,585	4,667	9,651	7,168	8,415	14,276	12,754	13,082
N. Carolina	15,618	12,827	31,367	22,770	24,199	23,518	38,388	37,026	54,885
Oklahoma	27,152	18,381	25,395	22,671	33,494	21,297	49,823	51,875	46,692
S. Carolina	12,691	11,491	18,376	21,739	16,090	9,467	34,430	27,581	27,843
Tennessee	22,848	30,464	54,968	25,392	24,320	22,361	48,177	54,784	77,329
Texas	141,300	139,430	110,715	83,537	80,395	106,177	224,837	219,825	216,892
Virginia	46,380	39,443	43,185	26,793	39,579	23,090	73,173	79,022	66,275
TOTAL	481,971	456,064	482,476	403,678	358,285	384,211	885,649	814,349	866,687
Change:									
'53-'52	—6%			—7%			—6%		
'53-'52	+6%			+5%			+9%		

Table courtesy of F. W. Dodge Corp.

Oklahoma Natural Gas Company Promotes Industrial Development in Service Area

by Joseph Bowes

President

Oklahoma Natural Gas Company

OKLAHOMA is one of the youngest states in the Union and will not celebrate its fiftieth anniversary for another three years. As a young state, it has not had the opportunity thus far to grow industrially, as have its older neighbors. Oklahoma Natural Gas Company uses this advantage of youth to accelerate the industrial growth of Oklahoma by lending its support and cooperation to the many agencies who are calling attention to the advantages of an industrial location in the State.

Joseph Bowes

Over one-half of Oklahoma Natural's annual deliveries of natural gas are to industrial consumers at the present time. This is a surprising fact to many people.

The story of Oklahoma's advantages in raw materials, labor and other services that industries require is being told throughout the nation by many agencies, both public and private. Rather than duplicating the work of these agencies, Oklahoma Natural has found that it can best promote the industrial development of the State by contributing in every possible way to the efforts of presently established organizations. This is accomplished by actively working with the State Planning and Resources Board, the Chambers of Commerce in all cities served by our system, and with the industrial departments of the railroads operating within the State, private banks and other utilities.

Several years ago representatives of the above mentioned organizations formed the Oklahoma Development Council and invited all people interested in development of the State to join together and pool both information and efforts to promote the interest of outside industries in Oklahoma. This organization has conducted three tours to the cities of the East and Midwest during the last several years to tell the story of Oklahoma advantages. Oklahoma Natural has supported these tours with both financial and manpower assistance, and in so doing has established many fine contacts with Eastern industrialists and developed a very fine spirit of cooperation with many outstanding people in Oklahoma who have taken time from their own businesses to promote the State.

Prospects for new industries derived from the above activities are carefully catalogued as to the basic necessities for each company. For example, the primary requirements for a chemical manufacturer may be large quantities of water and electric power. For garment manufacturing it may be labor in large quantities, both male and female. In searching for locations where the raw materials and services required are available we found this information difficult to obtain. We therefore have developed a survey form which has been furnished by the Chamber of Commerce, or equivalent organization, of each town we serve. The first contact was a personal call outlining how the information would be used and the necessity of accuracy in making out the report. This information is revised frequently and kept current. The following headings will give some idea of how complete our information is and how it enables us to quickly direct the attention of all concerned to the best locations for each prospect.

General Information: Labor Force; Male—Female. Employed; Male—Female.

Transportation Facilities: Railroads—Truck Lines—Highways.

Water: Present Usage—Capacity of reservoir.

Power: Supplier and service available.

Fuel: Delivered prices of coal, oil and gas.

Sites: Fairly complete descriptions of available industrial sites, including area and services.

Buildings: Detailed descriptions of industrial buildings available for rent or purchase, and prices.

Industrial Foundation: Brief information on personnel and capitalization of organization.

Existing Industries: List of present industries, number of employees and products.

Most inquiries we receive are for information on specific towns. A railroad may list several towns along their lines and ask which of them have the facilities named as most important by the prospective industry. We are supplying information from our file to practically all agencies working on industrial development in the State. Since we keep the detailed information only on towns we serve, this service has the effect of more or less channeling the prospects to our towns.

For the benefit of the various organizations who are active in obtaining new industries for Oklahoma and for the use of Oklahoma Natural personnel, a brochure "Oklahoma Offers Industry" has been prepared giving pertinent information with respect to the gas company. This brochure includes a map of the general territory served by the company and in which are located the more than 6000 miles of transmission and distribution lines; general information as to gas supply, reserves and rates; and pictures of some of the varied industrial plants served by Oklahoma Natural.

The results of the program conducted by the company toward industrial development have been very gratifying. Oklahoma Natural serves approximately two-thirds of the total gas meters in the State, but its offer of cooperation for the development of any section of the State has made the company as popular in the areas it does not serve as it is in the areas served.

During the postwar period, 1946 to 1953, the number of people employed in manufacturing within the state has increased one-half, and the payrolls of manufacturers in the state have increased by 123%. Our industrial deliveries of natural gas have increased by approximately 50% during the same period, and the total number of customers served by our company have also increased about 50%.

Post-War Adjustment Almost Ended

See Sound Improvement in General Business Activity

by John F. Falvey*

Financial Editor

John F. Falvey

WITH indications fairly strong that the major portion of the post-war adjustment now has become a matter of history, the question naturally arises—where do we go from here?

Analysis of past readjustments and of the events which followed them provides no yardstick whatever by which to measure the probable course of business over the months and early years ahead.

The present adjustment now nearing its end represents a correction chiefly of an overbuilt inventory situation and a changeover from a sellers' to a buyers' market. Conspicuous by their absence are the free and easy economic conditions, unbridled speculation and lack of governmental controls which characterized the adjustment of the early 1920s. Gone is the New Deal concept in the adjustment of the 1930s, that neither business nor the individual could be expected to provide satisfactorily for themselves in the so-called "mature economy" into which the country had entered, but must depend on the beneficence of a providential government on the road to equally so-called "security." And completely satisfied now is the post World War II vacuum which afforded such terrific stimulus to business and which had its outgrowth in the rise in strength of labor unions and in the strong and long-sustained sellers' market.

Absent these factors, which had so much to do with past adjustment eras, the present economic correction is expected to be followed prior to the forthcoming year-end by sustained and sound improvement in general business activity.

The business picture is not without its unfavorable aspects. Among these are the fact that production of steel ingots, miscellaneous freight car loadings, output of paperboard and electric power production have failed to demonstrate in recent months the strength which they normally show at this time of year; and the monthly index of industrial production compiled by the Federal Reserve Board has not yet stemmed its decline of the past seven months.

On the favorable side, however, new housing starts at last report increased more than seasonably from month-earlier levels. Construction contract awards in February (the latest month for which data are available at this writing) were 20% ahead of a year earlier and for the first two months of the year were 9% above the last previous record for the same two months, established in 1951. Business capital expenditures in 1954 are estimated at little more than a shade below 1953's very high figure. Finally, total personal disposable income after taxes is off less than 2% from last summer's peak and is still holding above the level of a year ago.

From the standpoint of consumer finances, studies made of the subject indicate that for only a small segment of the population is the total of debt outstanding large enough to represent a threat to buying power. And even here the debt burden is confined chiefly to the moderate-to-higher income groups where debt-paying ability currently is found to be stable if not actually improving. The group in question is the $4,000 to $7,500 annual income classification of consumer, who owes 48% of personal debt outstanding and owns but 30% of the liquid assets. Improvement in the debt-liquid asset position of this group would be welcome, since individuals in this and higher income groups are the most likely sources of funds for common stock investment.

The expansion in business which is now believed to be in fairly early sight should be prolonged subject, of course, to the normals ups and downs to which a free economy is subject under unfettered demand-supply conditions, and to be paced by a population growth conservatively estimated to reach at least 175 million people, five or six years hence—for a gain of roughly 10% from present levels.

The trend of business promises to be most competitive, however, due both to the tremendous scope of the country's productive capacity in relation to domestic consumption, and to the sharply increasing efficiency of manufacturing equipment now going on the line and in prospect as manufacturers seek to at least retain their present competitive positions in their respective industries.

To get some small idea of the increasing competitive and small profit margin nature of many types of business one need look merely to the high and still rising break even point of an increasing

(Continued on page 57)

INDEX OF YIELDS : SELECTED UTILITIES STOCKS

	Apr. 1954	Mar. 1954	Feb. 1954	Jan. 1954	Dec. 1953	Nov. 1953	Oct. 1953	Sept. 1953	Aug. 1953	July 1953	June 1953	May 1953
Natural Gas Transmission Companies	4.15%	4.17%	4.25%	4.21%	4.39%	4.44%	4.44%	4.90%	4.46%	4.76%	4.72%	4.34%
Natural Gas Transmission & Distribution Companies	5.11	5.27	5.39	5.39	5.54	5.49	5.58	5.74	5.13	5.41	5.55	5.28
Manufactured & Mixed Gas Companies	4.67	4.68	4.66	4.66	4.91	4.75	4.94	5.14	4.99	5.06	5.08	4.80
Class "A" Electric Companies	4.70	4.68	4.92	4.92	5.10	5.15	5.14	5.41	5.27	5.41	5.53	5.18
Class "B" Electric Companies	4.94	4.93	5.01	5.14	5.23	5.14	5.37	5.61	5.50	5.41	5.68	5.35

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Year-Round Air Conditioning

(Continued from page 34)

pital, religious and residential construction markets. We are having a good increase of new residential projects with all-year air conditioning.

SOUTH CAROLINA—by Sam L. Roach, Columbia—*Map Area C*

The large number of mills and manufacturing plants now locating in South Carolina.

Increased use of air conditioning is especially noticed in the better class residences.

GEORGIA: The Southeast—by Mack Harmon, Atlanta—*Map Area D*

The many projects being constructed by the Georgia State School Building Authority is the number one item of construction in our state. As of this writing there are 58 major projects out for bids. Twenty-six of these are projects for the SSBA which shows that almost half of all projects (including churches, engineering, commercial and military construction) are owned by the authority.

Summer and Winter air conditioning is apparently here to stay. In fact, we now ask about air conditioning just as we would any other important data on a report. Our churches are using air conditioning for the comfort of the congregation or in the event of a lack of funds, provide for future air conditioning when constructing their building.

KENTUCKY—by Denton C. Norris, Cincinnati—*Map Area E*

The tremendous industrial development in Kentucky since World War II. It has altered the economy of the state and has contributed to increasing the wealth and growth of the state.

Definite increase in installations and consumption of gas in the Kentucky area. Also, ever-increasing installations of all-year air conditioning.

TENNESSEE—by Dixon T. Gaines, Jr., Memphis—*Map Area F*

The extremely keen competition. The unusually large number of bidders on all jobs and trades is driving successful bids below job estimates.

All-year air conditioning facilities are being included in new moderately priced homes which do not include all-year air conditioning, so that the buyer (owner) may easily convert.

MISSISSIPPI—by James R. Jones, Jr., Jackson—*Map Area G*

The most unusual feature of construction activity in Mississippi is the number of new industries which we are getting. We are no longer just a "cotton Mississippi"—our economy is becoming better balanced every day.

All-year air conditioning is being used more and more both in old buildings which have not had it before and in new buildings, in all price ranges. It is being used in smaller residences now, where that was unheard of several years ago.

ARKANSAS—by J. J. Orsini, Little Rock—*Map Area H*

Probably the installation of year-'round air conditioning in the $10,000 to $15,000 residences.

According to one of the prominent designers in the state, William F. Hibbard, the installation of air conditioning is definitely on the increase. This is particularly noticeable in two-ton equipment. It is also noticeable that local housing projects are having a tendency to lean toward the installation of air conditioning.

LOUISIANA—by S. J. Kupecky, New Orleans—*Map Area I*

Residential construction continues strong in 1954 and if the start of the first two months is an indicator, residential construction should hit a new high.

Natural gas continues to be THE fuel in Louisiana and Mississippi due to the local fields. Gas facilities are one reason why new industries are locating in this region.

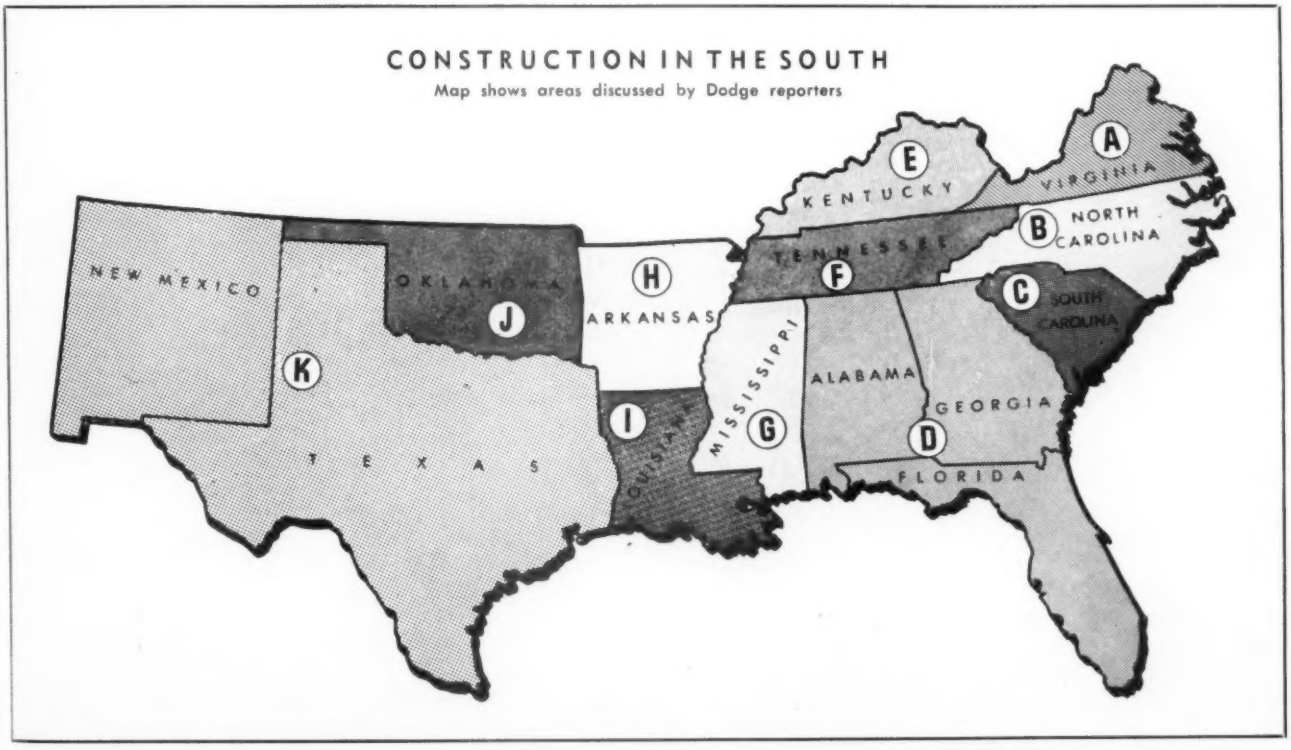
One divisional manager of a large air conditioning company with an office in New Orleans reports that mortgage companies now favor homes in this area with air conditioning because of their resale value. He said that 1952 was the first real year in year-'round air conditioning being installed in new homes. Business really mushroomed. In 1953 business increased 500% and is expected to increase 300% in 1954 over 1953. Year-'round air conditioning is normally installed in homes costing $15,000 and over in this area. However, many installations are also going into homes as low as $12,500 exclusive of land.

OKLAHOMA—by B. W. Querry, Oklahoma City—*Map Area J*

The fact there is no building "season," but rather a year-'round building program. There are very few days when jobs are shut down due to inclement weather, thus making for much speedier building. Cooperation between the sub-contractors and general contractors, plus year-'round building tend to complete jobs in an unusually short time.

Year-'round air conditioning in Okla-

(Continued on page 54)



DRESSER
MANUFACTURING DIVISION
IS ONE OF THE DRESSER INDUSTRIES

Dresser Manufacturing Division has grown up and expanded with the gas and oil industries. Dresser Couplings, the first leakproof pipe joints, made possible the high pressure transmission of gas over long distances. Dresser's complete line of couplings, repair clamps and sleeves, and welding fittings are specially designed to meet requirements of these industries.

MAGNET COVE BARIUM CORP., Houston, Tex., Malvern, Ark. Magcobar drilling mud, Magcogel bentonite, Mylojel, Fiber Seal, Jel-Oil mud.

CLARK BROS. CO. DIVISION, Olean, New York. Engines and compressors—gas, steam and diesel driven.

DRESSER MANUFACTURING DIVISION, Bradford, Pa. Oil and gas pipe couplings, fittings and sleeves—rolled and welded rings—welded fittings and flanges.

KOBE, INC., DIVISION, Huntington Park, Calif. Complete hydraulic oil field pumping systems, including the Kobe Free Pump.

No. 3 in a series about Dresser Industries

What is the DRESSER plus+?

The Dresser Plus is the extra *service* you get when you deal with any Dresser company. It is an added advantage for you which stems from Dresser's unique overall organization. For Dresser is many companies with a single purpose—to provide the growing oil and gas industries with operating equipment that is *second to none.*

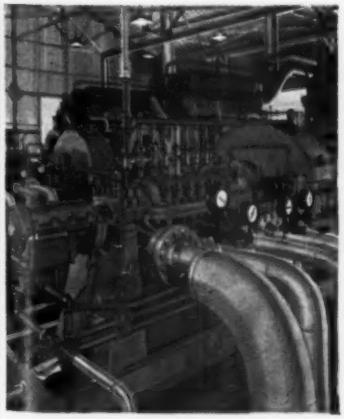
Each company in the Dresser group functions independently within its own specialized field—yet each can draw from the total resources, in manpower, research, and know-how, of the combined Dresser operations. When you work with any of the Dresser companies, all of the facilities of Dresser are *at your service.*

Planned, coordinated specialization—company by company—"one for all and all for one"—that is the DRESSER PLUS +

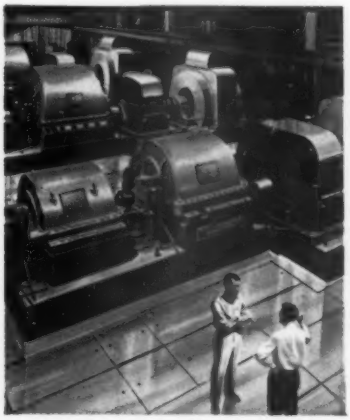
Gas utilities and pipelines use Dresser Products as standard practice in the installation and maintenance of their underground lines. In the oil fields, Dresser Couplings and long sleeves are widely employed on pipelines, field and tank connections, machinery and equipment hookups. DRESSERTAPE is a new plastic coating for the protection of pipe against corrosion.

DRESSER INDUSTRIES, INC.
OIL, GAS AND CHEMICAL EQUIPMENT

ATLANTIC BUILDING ★ DALLAS, TEXAS



PACIFIC PUMPS, INC., Huntington Park, Calif. Centrifugal pumps, deep oilwell plunger pumps, hot oil and boiler feed pumps.



ROOTS-CONNERSVILLE BLOWER DIVISION, Connersville, Ind. Rotary positive blowers, gas pumps, centrifugal blowers, exhausters; positive displacement meters.

SECURITY ENGINEERING DIVISION, Whittier, Calif., Dallas, Tex. Rock bits, reamers, casing scrapers, reamer rock bits, coring bits, Securaloy.

IDECO DIVISION, Dallas, Beaumont, Tex. Derricks, drawworks, rambler drilling rigs, traveling blocks, rotary tables.

Old Days Recalled... from AMERICAN Gas Journal

ESTABLISHED 1859

90 YEARS AGO

May 1864

NATURAL GAS IN PENNSYLVANIA. *Near Scranton, Pa., there is said to be a place where natural gas, in large quantities, exudes from the rocks. It has been proposed to gather this gas in holders, and supply the town. The town of Fredonia, N. Y., derives its entire supply of gas from this source, and it is said to give great satisfaction.*

MAY 1864

BOSTON GAS INSPECTION. *Frederick E. Stimpson, Inspector of gas meters and gas, reports the quality of gas supplied by the Boston Gas-Light Company for the month of March, as follows: The illuminating power averaged 16.76 candles, and ranged from 15.32 to 18.48 candles. . . . There were no indications of either sulphuretted hydrogen or ammonia in the gas.*

MAY 1864

CINCINNATI, O. *The enormous price of coal which has been ruling during the winter at Cincinnati, has led many gas consumers to try the calorific powers of gas, and a very large number of gas stoves has been sold in that city.*

50 YEARS AGO

May 1904

THE PORTLAND (ORE.) GAS COMPANY has arranged for the placing of 30 miles of mains this season.

MAY 1904

AT THE ANNUAL MEETING of the United Gas Improvement Company, which will be held in Philadelphia today, John F. Dryden, President of the Prudential Insurance Company, N. J., will be chosen a Director, vice the late William L. Elkins.

MAY 1904

THE GAS MACHINERY COMPANY, Cleveland, O., has been authorized to install the necessary purifying equipment required on the gas plant of the Westerly (R. I.) Railway and Lighting Company.

MAY 1904

THE "CAPITALISTS" who have been drilling for natural gas in the vicinity of Penn Yan, N. Y., are inclined to give up the venture. Causes; little gas and less money.

MAY 1904

AT THE ANNUAL MEETING of the shareholders and directors in the Petersburg (Va.) Gas Company the following officers were elected: President, R. D. Apperson; Vice President, J. D. Horsely; Secretary and Treasurer, F. H. Shelton; Directors, the officers named above and Joseph H. Reading and Frank Bates. Edward A. Pond was re-elected Manager and W. H. Cole was re-elected Superintendent.

MAY 1904

MR. J. B. COOKE has been appointed Superintendent of the gas department of the Birmingham (Ala.) Railway, Light and Power Company, vice T. Byron, resigned.

MAY 1904

MR. THEODORE K. JACKSON, Manager of the Enid (Okla.) Electric and Gas Company, was elected First Vice President of the Southwestern Electric and Gas Association, at the meeting of that reorganized body in Dallas, Tex., last month.

MAY 1904

MR. W. E. MOCKETT, General Manager of the Dallas (Tex.) Gas and Fuel Company, has arranged for the construction of a new retort house, planned for the covering of 4 benches of 9's, to be fired on the full-depth system.

MAY 1904

MR. F. M. SACKETT has been elected a Director in the Louisville (Ky.) Gas Company, vice the late Mr. Kilbourne W. Smith.

MAY 1904

MR. R. C. CONGDON, under the recently perfected combination of the Frederick (Md.) Gas Company and the Frederick Electric Light and Power Company, will be the active manager of both properties.

25 YEARS AGO

May 1929

DISTRICT OFFICES *for the properties owned by the Central Public Service Corporation in the South as well as main offices for the Atlanta Gas Light Company will be established at Atlanta, Ga. In addition to the central office branch offices will be established in various parts of Atlanta for the convenience of customers paying gas bills. Headquarters for 26 gas companies acquired by the Central Public Service Corporation in the South will be maintained in Atlanta, the list of states including Georgia, Alabama, Tennessee, Florida, North Carolina, South Carolina, Mississippi, Louisiana and Texas.*

MAY 1929

THE ARKANSAS NATURAL GAS CORPORATION, *a Cities Service Company, with headquarters at Shreveport, for the past year has served natural gas to Little Rock, and just recently purchased the distribution system in that city from the Dawes interests, at the same time the Gas Service Company purchased the Jackson County Light, Heat and Power Company at Independence.*

American Gas Fundamentals OUTLINE

NATURAL GAS
- *Geology
- *Drilling and completion
- *Methods of estimating reserves
- *Chemicals from gas
- *Natural gas conservation
- *Underground storage of natural gas

MANUFACTURED GASES
- *Coke oven gas; producer gas, blue gas carbureted water gas
- *Reformed gas
- *Hi-Btu oil gas
- Interchangeability

LIQUEFIED PETROLEUM GASES
- *Sources, properties and uses

BASIC GAS LAWS
- *Perfect gases
- Supercompressibility

TRANSMISSION
- *Pipe lines
- *Corrosion and pipe protection
- *Compressor stations
- *Gas conditioning
- Flow formulae
- *Principles of orifice measurement
- Pipe coatings and protection methods
- *Pipeline and network gas dispatching

GAS STORAGE
- *Methods of storing gas

GAS DISTRIBUTION
- *System design and operation
- *Pressure regulation, part 1
- *Pressure regulation, part 2
- *Leak detection and control
- *Metering
- Measurement and accounting
- *Odorization
- Customer service

GAS UTILIZATION
- *Principles of gas combustion
- *Competitive fuels, part 1
- *Competitive fuels, part 2
- Domestic
- Commercial
- Industrial
- *Principles of absorption refrigeration

CONVERSION PRACTICES

MANAGEMENT PROBLEMS AND POLICIES
- *Corporate structure
- *Public utility regulation
- *Public relations
- Theories of rate making
- *Functions of the Land Department
- *Communications in the gas industry
- Personnel Management

GLOSSARY
- *Ab-to-Spe

***Indicates chapters published since January 1, 1951; available without charge to new subscribers to American Gas Journal.**

How to Use the Material

American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide any gas utility employee toward a broader understanding of the industry as a whole.*

The series is designed to be removed from each current issue of AMERICAN GAS JOURNAL *and filed in a ring binder where it may be accumulated into a text book of permanent usefulness. Material should be filed under the major subject head appearing in the upper right hand box at the head of each chapter.*

Glossary of Gas Industry Terms: Spe to Up

SPECIFIC WEIGHT Weight per unit volume of a substance.

SPENT OXIDE Iron oxide which has absorbed its capacity of hydrogen sulphide in the gas purification process. It can be restored by heating in the presence of air.

SPLIT RUN The breaking of the production period of a water gas making cycle into an up run, a down run and a final up run.

SPLIT SLEEVE A sleeve for pipe which is cut in half longitudinally so it may be fitted to a pipe in service. Provision is made for bolting or clamping the sleeve in place. (See Solid sleeve.)

SPONGE A mixture of iron oxide and wood shavings for the removal of hydrogen sulphide from manufactured gas.

SPONTANEOUS COMBUSTION Burning brought about by the physical and chemical conditions of a substance which cause it to generate sufficient heat for ignition within itself.

SPRING LOADED The use of a spring in the mechanism of automatic valves or governors to set the predetermined operating pressure.

SPUD The small plug, with an orifice through it, which admits gas into the mixing chamber of a burner.

STABILITY The tendency of a burner to remain lighted with a wide range of fuel-air mixtures.

STACK A chimney. Also, a number of coal gas retorts, side-by-side.

STACK LOSS The flue gas loss; the sensible heat lost up the chimney in the dry flue gas; the sensible and latent heat of the water vapor contained in the flue gas.

STACK VALVE A valve on the superheater of a water gas set, used to put gas through the wash box during a production run and through the stack or chimney during the blow period.

STANDARD AIR Air at standard temperature and pressure (14.7 pounds per square inch and 60° F).

STANDARD CONDITIONS The basic temperature and pressure for measurement of gas volumes: 14.7 pounds per square inch (30 inches of mercury column) and 60 degrees F.

STANDARD METERING BASE Standard conditions, plus agreed corrections, to which all gas volumes are corrected for purposes of comparison and payment.

STANDARD UNIT Any mutually agreeable unit of measurement by which gas production, flow and sales can be recorded, such as Btu, 1000 cubic feet (Mcf), Btu per cubic feet or therm.

STANDBY PERIOD OR TIME The period of time in which a unit of equipment is not operating but is in condition for immediate operation if necessary.

STATIC PRESSURE Force per unit area exerted by a fluid upon a surface at rest relative to the fluid.

STATION GOVERNOR (See Governor.)

STATION METER A meter of high capacity for measuring the output of a gas plant.

STEAM ACCUMULATOR A large tank to which exhaust steam is piped for use in other operations.

STEAM ATOMIZING BURNER A burner in which high-pressure steam breaks up fuel oil into fine droplets which quickly vaporize and hence burn more easily.

STEAM PURGE The removal of combustible gas from pipe or equipment by displacing it with steam.

STEAM TRAP A pot, generally equipped for automatic emptying, set in a low place in a steam line to collect and dispose of any condensed water in the steam.

STEAM TURBINE A rotary-type of steam-powered equipment used to drive machinery.

STEEL A chemical compound of iron and carbon, containing no free carbon.

STEEL TANK HOLDER A water-sealed gas holder with the bottom tank built of steel and above ground.

STEM A round rod connecting two movable parts of a mechanism for transferring motion from one to the other.

STOKER A mechanical solid-fuel feeding device.

STOP COCK A small, hand-operated, plug valve.

STOP END RETORT Coal gas retort closed at one end and a charging and discharging door at the opposite end.

STORAGE HOLDER A gas holder for storage of excess gas supply for use during times of excess demand.

STRAIGHT GAS UTILITY A company which derives at least 95% of its operating revenue from gas operations.

STRAIGHT RUN OF PIPE Several lengths of pipe joined together in a straight line.

STRAIGHT SWIVEL A meter connection in which all parts are in a straight line.

STRAINER A fine-mesh screen used to separate solid particles from a fluid stream.

STREET ELL An L-shaped pipe fitting threaded on one end and tapped on the other end.

STREET TEE A T-shaped pipe fitting in which one end of the run is connected to the gas main, the other end of the run plugged, and the branch connected to the customer's service line.

STRING A connected series of drilling tools arranged for lowering into the hole. Also, to lay pipe end-to-end along a pipeline right-of-way.

STRIP To remove light hydrocarbon fractions from gas for recovery and sale.

SUBATMOSPHERIC PRESSURE Below atmospheric pressure or a partial vacuum.

SULPHUR A chemical element (S), generally yellow in color, which is an impurity in fuels, by itself or as sulphur compounds; with hydrogen and oxygen it forms corrosive sulphuric and sulphurous acids.

SULPHURETED HYDROGEN Hydrogen sulphide (H_2S).

SUMMER VALLEY The depression which occurs in the Summer months in the plot of the daily load of a gas distribution system.

SUMP A hole or low point in a floor or piece of equipment, toward which all liquid will drain.

SUPERHEATED STEAM Steam at a higher temperature than the saturated steam temperature at a given pressure.

SUPERHEATER The section of a boiler in which steam is superheated; the section of an oil gas plant in which the gas is fixed; the section for fixing the mixed water gas and oil gas in a carbureted water gas plant.

SUSPENDED HOT AIR HEATER A heater through which air is fan-driven and which is hung from the ceiling of the heated space.

SUTHERLAND LAW Expresses the viscosity coefficient of a gas in terms of its absolute temperature.

SWEET NATURAL GAS Natural gas containing such small amounts of sulphur compounds that it can be used without purification.

SWING CONNECTION The combination of a street tee and a street ell which will swing up or down slightly for aligning with surface pipe and absorbing traffic vibrations.

TABLE The supporting horizontal shelf for the valves and mechanism in a gas dry meter.

TACK First attachment of one piece of metal to another by welding in one or more spots.

TANGENT AND CRANK The connecting link between diaphragms, slide valves and index mechanism in a gas dry meter. A cycle of diaphragms filling and emptying operates through the tangent and crank to move the valves and also to cause the index to move as an indication of the volume of gas passed through the meter.

TANK A large vessel for storage of fluids, constructed of wood, metal or concrete.

TANKAGE The process of storing liquids in a tank, the capacity of tanks, or the price paid for tank storage of liquids.

TANK BARGE A compartmentized scow or barge for bulk transportation of liquids. May be pushed or towed by a tug or may be self-powered.

TANK CAR A railroad car frame-and-wheel assembly, with a tank mounted on them.

TANKER A ship designed for carrying liquids in its holds.

TANKSTRAPPER An individual who gages tanks to determine the volume of liquid they contain or could contain.

TANK TRUCK An automotive truck with a tank for liquids mounted on its frame.

TAP To make an opening in a vessel to drain the contained liquid; also to cut threads in a round hole so that other fittings or equipment can be screwed into the hole.

TAP HOLE A tapped hole in a surface or gas main.

TAR A black, gummy, viscous by-product of coal- or water-gas manufacture. Used as chemical raw material, road oil, roofing compound and as a fuel.

TAR EXTRACTOR A piece of gas plant equipment for the removal of tar from gas.

TAR SEAL Use of tar as a sealing material around the piston rim of a waterless gas holder to prevent gas escaping from the holder.

TAR SEPARATOR A baffled flume box or trough which collects tar from the various water liquors in a gas plant.

TEE A T-shaped pipe fitting having three branches for connecting piping.

TEMPERATURE Basically the degree of heat above absolute zero. A measure of the quantity of heat contained in a substance.

TEMPERING A controlled heating-and-cooling of a substance to produce a desired degree of hardness and toughness. The process is applied to steel tools and parts subject to shock and cutting actions; also, to glass products.

TEMPERING BATH A bath of suitable liquid, such as oil, water or molten lead, used to cool steel after being heated to the desired temperature in the tempering process.

TERZIAN FACTOR A factor, based on the amount of oil and fuel used and the heating value of gas produced, to compare operating results of carbureted water gas plants. The amount of tar produced is included when heavy oil is used.

THEORETICAL AIR The chemically-exact volume of air necessary for the complete combustion of a specific amount of a fuel.

THEORETICAL DRAFT The calculated pressure differential between the atmosphere, at standard conditions, and the interior of a furnace with fires burning, disregarding frictional effects.

THEORETICAL FLAME TEMPERATURE Total heat content of initial fuel-air mixture divided by the heat capacity of the combustion products.

THERM A quantity of heat equal to 100,000 Btu.

THERMAL COEFFICIENT OF LINEAR EXPANSION The change in a unit-length of a substance for a one degree change in temperature.

THERMAL CONDUCTIVITY A measure of the rate at which a material will conduct heat. Usually, this is expressed as Btu per hour, per square foot of area, per inch of thickness, per degree F temperature difference between two opposite faces of the material.

THERMAL CONVECTION Heat transfer through a fluid by means of currents in the fluid.

THERMAL EFFICIENCY The ratio of the amount of heat used to the total amount of heat theoretically available from the burning of the fuel.

THERMAL EXPANSION The volumetric increase of a substance caused by an increase in its temperature.

THERMAL INSULATION Materials having a low thermal conductivity used in any location where it is desired to minimize the transfer of heat.

THERMAL RADIATION Heat transfer by means of waves, similar to light waves, but of longer wave length, emitted from a hot body.

THERMOCOUPLE Two pieces of dissimilar metal welded or brazed together at one end. When the welded end is at a different temperature from the free ends, an electrical voltage is developed which can be measured across the free ends and which is proportional to the temperature difference and can therefore be used to measure the temperature at the brazed end.

THERMODYNAMICS The science and study of the relationships between heat and mechanical work.

THERMOMETER Any temperature measuring device.

THERMOSTAT An automatic device which controls the temperature at its location by actuating and stopping the devices that supply fuel to the heating equipment.

THREAD A spiral groove around the inside of a hole or around the outside of a rod or pipe. An inside-threaded piece and an outside-threaded piece can be solidly connected by meshing the ridges and grooves of each with the other, provided each grove has the same shape, depth and pitch as the other.

THREAD PROTECTOR A covering device screwed on pipe threads to protect them until pipe is used.

THREE-WAY VALVE A valve having three ports or openings and built so that fluid can flow through any two of the ports or be shut off entirely.

THROAT (See Venturi throat.)

THROTTLE As a noun, essentially a form of valve; as a verb, to restrict the flow of fluid through a passage.

THROUGH RETORT A horizontal coal gas retort with a door at each end. Coal is charged to the retort at one end and coke discharged at the other end.

THROW The pressure exerted by a gas holder on the gas at its outlet.

TIE IN To connect additional piping or equipment to existing pipes or equipment.

TIE ROD A steel rod between two parts of a structure to brace them and hold them together.

TIN CASE DRY METER Also called a tinned case meter, this is a type of residential and small commercial gas meter in which the mechanism is housed in a case made of tinned steel plates soldered at the joints.

TIN HAT A protective metal or plastic helmet worn by construction workers, well drilling crews and plant operating personnel.

TOLUENE A light oily by-product of coal gas manufacture ($C_6H_5CH_3$).

TON A unit of weight equal to 2,000 pounds.

TOP LIFT The inner section of a water sealed gas holder.

TORCH A portable gas burner connected to a source of gas by a flexible tube, used for heating and, with a long handle, to light large gas burners. May be connected to compressed air or oxygen and used for cutting and welding.

TOTAL PRESSURE The sum of the static pressure (pressure of the motionless fluid) and the pressure due to the velocity of a fluid's motion.

TOWER SCRUBBER A verticle vessel filled with plates or suitable packing over which scrubbing liquid flows while the gas to be scrubbed flows upward through the liquid.

TRACK HOPPER A fuel hopper beneath railroad tracks into which coal cars are emptied through their dump doors.

TRACK SCALES Weighing scales in which the platform carries a section of railroad tracks so that railroad cars can be weighed one at a time.

TRANSMISSION COMPANY, GAS A company operating a natural gas transmission pipeline system and receiving none or less than 5% of its operating revenues from the operation of gas retail distribution systems owned or managed by the transmission company.

TRANSMISSION MAIN (See Gas Main.)

TRANSMISSION SYSTEM Pipelines and equipment for collecting gas from various sources of supply and delivering it to various retail distribution areas.

TRAP A reverse bend device in a pipe line to provide a water seal, such as in waste lines of kitchens and bathrooms; a device for automatically removing moisture from steam or gas; a low spot in a pipeline.

TRAPPED PIPING A system of piping which has a low spot that collects liquid at a point other than a trap location.

TRAVELING CRANE A movable mechanical device for lifting and moving heavy loads from one point to another. The crane may move on elevated or ground rails or on its own wheels or tractor treads.

TRENCH As a noun, a long narrow ditch in the earth's surface; as a verb, to dig a ditch.

TRENCHING MACHINE A mechanical ditch digger, usually self-propelled, which moves over the ground as it continuously digs a trench, throwing the dirt to one side as it goes.

TRUNK, TRUNK MAIN (See Gas main.)

TUBULAR CONDENSER (See Condenser.)

TUBULAR GOODS A general term for all classes of pipe, tubing and casing used for the drilling and production of oil and gas.

TUNNEL BURNER One sealed in the wall of a furnace in which combustion takes place in the refractory tube or tunnel which is part of the burner.

TUNNEL FURNACE Long, continuous furnace in which material being heated is pulled or pushed through furnace on cars, conveyors or rails.

TURBO BLOWER A blower in which the rotating part is equipped with blades which rotate between stationary blades attached to the housing. The respective sets of blades are set at an angle such that, as the rotor turns, gases are pushed through the blades and discharged from the opposite side, pass through the stationary blades and then are given another push by the next set of rotating blades, finally being discharged from the casing at the opposite end from which they entered.

TURBULENCE A condition of fluid flow in which the movement of a given particle of the fluid is constantly changing both in direction and velocity.

TURNDOWN The ratio of maximum-to-minimum input rates.

TURN-OFF Discontinue gas service to a customer by closing and locking the meter-cock.

TURN-ON Start gas service to a customer by unlocking and opening the meter-cock.

TWIN GENERATORS A carburetor and a generator, of a carbureted water gas set, both converted to high-Btu oil gas production.

TWO-PIPE SYSTEM A heating system in which the heating medium (steam or water) is supplied to the connected heating units through one pipe and returned to the heat source for reheating through another pipe.

TWO-VALVE SYSTEM A gas-air mixing system using a separate valve to control both gas and air supply. The valves may or may not be interconnected.

U-BEND A U-shaped pipe fitting that connects two runs of pipe with a 180° change in direction.

U-GAUGE A U-shaped glass tube containing water or mercury and used to measure small pressures or pressure differences. One side of the U is connected to the pressure source and the other side left open or connected to another point in a system. The difference in liquid-level in the two arms of the U is a measure of the difference in pressure between the two sides.

ULTIMATE ANALYSIS The percentages of the various chemical elements composing a substance.

GLOSSARY

ULTIMATE CO_2 The maximum theoretical percentage of flue gas CO_2 that it is possible to produce from the complete combustion of a fuel with the chemically-correct fuel-air ratio.

ULTIMATE STRENGTH The breaking strength of a material.

ULTRA-SHORT WAVES, MICROWAVES Electro-magnetic waves of greater than 30,000 kilocycles per second frequency or less than 10 meters wave length.

UMPIRE ANALYSIS An analysis made by a neutral third party to resolve differences of analysis between contractual parties.

UNACCOUNTED-FOR GAS The difference between the amount of gas made and/or bought by a distribution system and the amount of gas sold, used in the system and known to be lost.

UNCARBURETED BLUE GAS Manufactured blue (water) gas as it is produced in the generator of the gas plant.

UNDECOMPOSED STEAM Steam that has not been broken down into oxygen and hydrogen in passing through the fuel bed of a blue (water) gas generator.

UNDERGROUND STORAGE The storage of gas, natural or LP, in natural underground reservoirs at a different location from which it was originally produced. This is done for more efficient utilization of pipelines and more economic deliveries to markets.

UNDERGROUND VAULT A durably-built pit or room, built below ground level, with access through the top or by means of a trench to an opening in the side wall.

UNDERRATED BURNER A burner using gas at less than its designed minimum rate; usually results in gas burning in the mixing chamber of the burner.

UNDILUTED LP GAS Liquified petroleum gas that has not been premixed with air.

UNION A pipe fitting used to couple two runs of pipe together without having to turn or dismantle either run of pipe.

UNIT HEATER A self-contained heating device having a fuel burner and heat distributing devices as an integral part of the unit. Also called a space heater, heat circulator or room heater.

UNIVERSAL JOINT A joint in a shaft which permits the rotation of the shaft to be transmitted at an angle.

UNIVERSAL MOTOR. An electric motor that can be used on either alternating or direct current, within the motor's design limits.

UNIVERSAL, SAYBOLT A measuring scale of oil viscosity, expressed as the seconds for a specific volume of oil to flow through a standardized orifice.

UNSATURATED HYDROCARBON Chemical compounds of carbon and hydrogen in which all the valence bonds of the carbon atoms are not taken up with hydrogen atoms.

UNSTABLE HYDROCARBON (See Unsaturated hydrocarbon.)

UPPER LIMIT OF INFLAMMABILITY The maximum ratio of fuel-to-air in a mixture that can be ignited. Any greater fuel percentage in the mixture makes it too rich to ignite.

UP RUN The part of the blue (water) gas production cycle in which steam is blown upwards through the generator.

UP STEAM The steam used in the up-run of a blue gas generator.

The Glossary of Gas Industry Terms, of which this the eighth installment, is being compiled by Robert M. Poe.

How Lone Star Gas Company Practices Safety and Makes It Pay Off

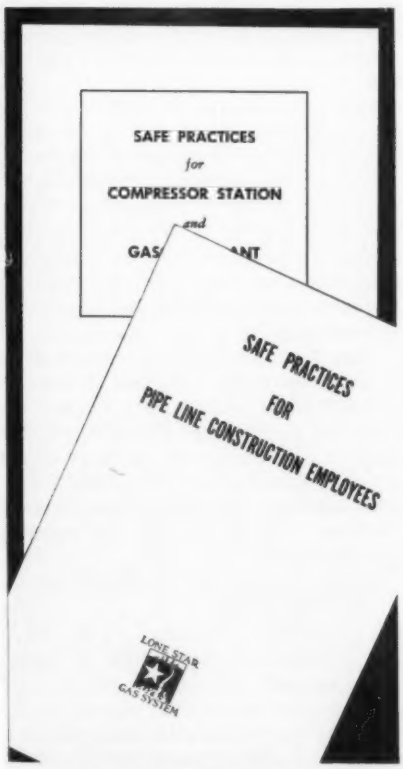
by A. W. Breeland
Assistant Director of Personnel
Lone Star Gas Company

LONE STAR GAS COMPANY, like any other private utility companies, is in business to make a profit. In order to do that we must not only furnish satisfactory gas service to our customers at a reasonable cost to them but in furnishing that service it must be done without endangering their lives and property, without endangering the lives and property of the general public, and certainly without endangering the lives and bodies of our most valuable asset, our employees.

A. W. Breeland

The management at Lone Star has long since recognized its obligation in safeguarding its customers, the public, and its employees. Safety is now, and has been for many years, a definite part of its construction, operation and maintenance programs.

From our own experience over these years and from observing the experience of others we are convinced that a sound, effective safety program has three principal elements: engineering, education and supervision.



Typical bulletins in Lone Star Gas System's safety program

Engineering for safety should begin on the drawing board. If it is a plant, such as a compressor station, measuring or regulating station, dehydration plant, gasoline plant, or town plant system, we must begin with the general layout, always having in mind the likelihood of future expansion. If it is a gasoline plant or compressor station, fire prevention must be taken into consideration and the several component parts or units so located that the fire hazard will not only be kept to a minimum, but also that in the event of a fire in one unit, it can be isolated, controlled or extinguished without involving the entire plant.

Facilities must be adequate to avoid unnecessary overloading. Pressure vessels are fabricated to meet code standards, and equally important the welded joints in high pressure pipelines must also meet code standards.

All installations such as compressor stations, gasoline plants, regulator and measuring stations, and gas distribution lines, must have adequate relief valves or other pressure relieving devices in order to avoid being subjected to pressure beyond that for which they were designed. This is extremely important in distribution systems where there is a possibility of the customers' service lines and appliances being suddenly exposed to excessive pressures.

All moving parts of machinery must be correctly guarded; stairways, elevated walk-ways, and pits should be of fireproof material and have suitable guard rails.

Electrical tools and equipment should be of suitable construction, should be properly grounded; all electric wiring and fixtures in hazardous locations must be of explosion-proof design.

Provide the necessary personal protective equipment where needed, such as goggles for eye protection; respirators to protect workmen doing sand or metal blasting, painting and other jobs where there is a respiratory hazard; safety belts when working at elevations, and hard hats when exposed to falling tools and equipment. Suitable fresh air masks or self-contained oxygen apparatus must be furnished employees who work in atmospheres deficient in oxygen or containing chemicals injurious to health.

A search is constantly being made for tools and equipment which will permit work to be done more efficiently and more safely.

In our efforts to protect our customers it is our constant desire to encourage him to use the most modern appliances in his home and business establishment, not only to increase customer-satisfaction but also to protect him and his family from accidents.

In addition to installing lines and facilities which have been designed to give the longest life and a minimum of maintenance problems, efforts are also constantly being made to protect our workmen who must work in streets, roadways and alleys with barricades painted yellow-and-black as recommended by American Standards Association, and by piling the excavated earth on the street- or roadway-side, by using traffic cones to divert traffic around the work-area, and by using large "men working" signs placed some distance ahead of the work-area, facing oncoming traffic, in order to call attention to our operations.

Where there is danger of cave-ins, excavations are either properly shored or braced.

At compressor stations, gasoline plants, and employee cottage locations, the most modern first aid and fire fighting equipment is provided for both plant and employees' house protection.

Cover of looseleaf manual

It is difficult to enumerate each and every item in engineering our operations for safety but, to summarize: it is the aim

(Continued on page 48)

The Extent of Utility Liabilities in Law of Attractive Nuisance

by Leo T. Parker
Attorney at Law
Cincinnati, Ohio

DURING a recent trip through the Southern states, officials and employees of gas companies located in relatively small towns or cities, brought up on several occasions the subject of legal liability of gas companies which fail to fence excavations, ponds and the like.

It is well established law that a gas company is liable in damages for injury or death of a child caused by an "attractive nuisance." According to a recent higher court an ordinary water reservoir or lake is not a legal "attractive nuisance."

In Newsby v. West Beach, 47 So. (2d) 527, the testimony showed: A utility owns a water reservoir which is situated within the corporate limits of the city. It was not fenced and was surrounded by grass lands. A child eight years old was attracted by the reservoir and while playing near it, fell into the water and drowned. The parents of the child sued the company to recover damages, contending that it was liable because it should have erected fences to prevent children from falling into the reservoir.

In holding the company not liable, the court said:

"As much as we may sympathize with the victims of these concepts, the law nor the welfare state have yet devised a means to compensate for them. Legal remedies should not be confused with good Samaritan impulses. The courts may enforce the former but they have no power to relieve against delicts of the latter. We are therefore driven to the conclusion that the water spray was not constructed so as to constitute an unusual element of danger."

For comparison, see Allen v. P. McDonald Corporation, 42 So. (2d) 706. In that case there was an artificial pond, caused by excavations, in a thickly populated area. Adjacent to the pond were banks of white sand that attracted children, one of whom slid down the bank into the water and was drowned.

In this case the court held the company liable on the basis that the white sand was an "attractive nuisance" and a fence should have been constructed to prevent children who were thereby attracted from falling into the pond.

This court held that the owners of artificial lakes are guilty of negligence and liable on account of drownings of children if there is some unusual element of attractive danger not existent in ponds generally.

Protect against injury

Modern courts consistently hold that a gas company is bound to keep all of its property, which is open to the public, in such condition that it is not unusually dangerous and attractive to children. In other words, any appliances or equipment attractive to children should be removed to a location which is not conveniently accessible.

It is important to know that if a child voluntarily participates in a wrongful act and is thereby injured, without being in some way attracted to the cause of an injury he cannot recover damages.

In Falardeau v. Malden & Melrose Gas Company, 175 N. E. 471, it was disclosed that a gas company placed some pipe on a vacant lot. This pipe was black and not attractive to children. The property was for sale and a For Sale sign was on the lot. The testimony tended to prove that at some previous time No Trespassing signs had been placed on the land, but that there had been no such sign on it for a substantial period. The lot was in a residential section of the city and there was evidence that for about two years children in the neighborhood had made use of it as a playground, and that it had been used by people to walk across to a neighboring street.

A child had his eye put out, and was seriously injured when he fell on the pipe. His parents sued the gas company to recover damages for the injuries sustained. The court held the child not entitled to a recovery, saying:

"No evidence was introduced to prove that the plaintiff (child) had any invitation from the gas company to be upon the lot, or had any right to be there, except such as may have arisen from the fact that for two years or more children had been in the habit of playing there and that the land was used by people to walk across. . . . Even if the pipes were of a nature to be attractive to the plaintiff, this would not amount to an inducement or invitation to him to use them. . . . When the plaintiff ran, walked or stepped upon the pipes of the defendant (gas company) he was not an invitee but became a trespasser and for an injury caused by such act of trespass can recover only by proof of wanton and willful misconduct on the part of the defendant."

Must warn consumers

According to a court decision, if without warning to consumers a gas company reduces or increases pressure in its gas lines, the company is liable for resultant damages to consumers, although the direct cause of the damage is failure of the consumers safety gauges and devices to operate.

In Oklahoma Gas Company v. Colvert, 260 Pac. (2d) 1076, it was shown that a gas company supplied gas to consumers from a high pressure line which carried 200 lbs. per square inch, when a gas heater used by a consumer utilized a pressure of 6 ounces per square inch. The heater had a safety device which was supposed to compensate for increased or reduced pressure in the main high pressure line. One day the safety device failed to operate and, without warning the consumers, the gas pressure was increased by the company.

In subsequent litigation the court held the gas company liable to the consumer, although the company argued that since the damage resulted from failure of the consumer's safety device to properly operate, the consumer, and not the gas company, must suffer the loss.

When license is needed

Recently a gas company official asked for a definition of the term "plumbing work" and whether a gas company which installs hot water tanks and gas heaters is required to obtain a plumbing license.

A late court held in the affirmative. In Springfield Gas Company v. Board of State Examiners of Plumbers, 110 N. E. (2d) 113, the testimony showed as follows: A state law provides that no person shall engage in the business of a master plumber or work as a journeyman unless he is lawfully registered, or has been licensed by the Board of State Examiners of Plumbers.

This gas company has for many years installed hot water tanks and gas heaters in buildings of its customers. It has never had a master plumber's license, and has used its own employees, none of whom is a licensed plumber. It has always complied with city ordinances and obtained all permits required by the building commissioner.

Recently the Board of State Examiners of Plumbers took the position that the gas company is illegally engaged in doing plumbing work without a license. The company denied this because no part of any installation made by the company involves pipes, tanks, faucets, valves, and other fixtures through which waste water or sewage is carried.

(Continued on page 59)

News of the Gas Industry

Nevada Now Has Natural Gas

The first natural gas to reach domestic and industrial consumers in Nevada became a reality in March with the completion and connection of the transmission line of Nevada Natural Gas Pipe Line Co. with industries at Henderson, Nev. and with the initiation of service to the California Pacific Utilities Co. at Henderson and the Las Vegas Gas Co. Both utility companies operate propane vapor systems which are being converted to natural gas.

Nevada Natural's 10¾-inch, 114-mile pipeline takes off from the El Paso Natural Gas system in the vicinity of Topock, Ariz., crosses the Colorado River, and then extends northerly into Southern Nevada to a terminal station just south of Las Vegas. While present capacity of the $2 million line has been limited by FPC to 20 MMcf daily, the line can operate up to a 23 MMcf capacity at delivery pressures ranging from 500 to 600 psi.

The extension of natural gas to this new territory became a necessity in view of the shortage of supply of other fuels in the territory. In spite of its proximity to Boulder Dam, Southern Nevada is short in electrical power supply. Natural gas also becomes a substitute for fuel oil and propane, both of which are in short supply and are usable in other Nevada areas where natural gas is wholly unavailable.

President of Nevada Natural Gas Pipe Line Co. is Harold G. Laub, who has had a long career in the gas industry as an engineer with Southern California Gas Co. and, for the past 15 years, president of Southwest Gas Corp. Vice presidents of the company are Jay Jenkins, pioneer business magazine publisher, whose magazines *Gas* and *Butane-Propane News* and other publications serve the gas and LP industries nationally, and Joseph W. Wells, president of Wells Cargo, Inc. Edward M. Berol is secretary, and William Laub is treasurer and assistant secretary.

The advent of natural gas into Southern Nevada completes the triumvirate of essential utility services of gas, water, and electricity in an area which is rich in mineral deposits and which has a potential future as one of the great chemical industry centers of the United States.—A. R.

Eisenhower Signs Hinshaw Gas Act

President Eisenhower reasserted his preference for state over Federal controls "wherever possible" in signing the Hinshaw Act recently, banning Federal regulation of pipeline carriers transporting natural gas within a state's boundaries.

The legislation, which had been contested in Congress for nearly a year, delegates to state regulatory commissions the authority now held by the Federal Government over gas rates and services.

Sen. Thomas A. Burks, Democrat of Ohio, a leading opponent, contended during Senate debate that it would cost consumers millions of dollars by placing some distributors under state regulation instead of under FPC.

Sen. John W. Bricker, Republican of Ohio, replied that Congress, in passing the Natural Gas Act 14 years ago, never intended that FPC should regulate utilities within state lines, but a 1950 Supreme Court decision in an East Ohio gas case threw doubt on this policy. This bill annuls much of the effect of the East Ohio Gas decision of the Supreme Court.

The President issued a statement saying he had signed the bill because of his conviction that the interests of the individual citizen would be "better protected when they remain under state and local control than when they are regulated or controlled by the Federal Government."

4 Promotions at American Meter Co

American Meter Co. has announced the following appointments: Hilding V. Beck has been named chief engineer; Donald C. Wiley has been appointed vice president of engineering and research; George W. Stevenson has been named manager of West Coast operations; and E. Jack Mowry has been appointed manager of industrial relations.

Hilding V. Beck

As chief engineer, Mr. Beck will direct all engineering activities for the company. He has been with American Meter since 1936 and prior to this was a professor of mechanical engineering, University of Oklahoma. For the last 15 years he has been an instructor at the Southwestern Gas Measurement short course at Norman, Okla. and Morgantown, W. Va.

Donald C. Wiley

George W. Stevenson

Mr. Wiley, who will supervise engineering and research activities, has been with the company since 1947 and was appointed director of research in 1949 and vice president-research in 1950.

As manager of West Coast operations, Mr. Stevenson will be in charge of the company's factories in San Francisco, Los Angeles and Alhambra, Cal., and all activities in Washington, Oregon, California, Nevada and Arizona. He joined American Meter in 1928, was appointed assistant manager, Los Angeles factory, in 1941, and manager in 1951.

Mr. Mowry will direct industrial relations activities for the company in his new position. He joined American Meter in 1937, and was personnel manager, Erie factory, from 1947 to 1951. Prior to his recent appointment he served as personnel director.

H. P. Carroll

H. P. Carroll, vice president and operating manager, Texas Distribution Div., United Gas Corp., died on April 6, after an illness of several months. He was 60 years of age.

Mr. Carroll, who entered the gas industry in 1911 as a map maker for Beaumont Gas Light Co., was promoted to manager of the company in 1926. He was transferred to Houston in 1930 as operating manager for Houston Gas & Fuel Co. and, when United Gas Corp. acquired the firm's properties, he became operating manager of distribution operations in Texas, Louisiana and Mississippi.

He held that position until 1939 when he became operating manager. He was promoted to vice president and operating manager of United's Texas Distribution properties in 1947.

Mr. Carroll frequently served on important committees for American Gas Association and Southern Gas Association.

S. E. Critchfield

S. E. Critchfield, manager, San Fernando Valley Div., Southern California Gas Co., died March 22, at the age of 48.

Mr. Critchfield at one time conducted his own engineering business, and served for one year as chief engineer for Light and Power Co., Twenty-nine Palms, Cal. He joined Southern California Gas Co. in 1939 as industrial service engineer. Absent from the company during World War II, he returned in 1945 as superintendent of maintenance in the butadiene plant. He became superintendent of residential service, customer service department, in 1947, and was appointed division manager, San Fernando Div., in 1950.

Mr. Critchfield was an active member of Pacific Coast Gas Association and American Gas Association.

Texas East Prod Corp Names VP

Haden J. Upchurch, land department manager for Texas Eastern Production Corp., was elected vice-president at a recent meeting of the board of directors. In addition to new administrative duties Mr. Upchurch will continue to manage the activities of the land department.

Mr. Upchurch joined the company in 1952 and prior to that was district landman for the Cabot Carbon Co. in Midland, Tex.

Greetings to SGA from Arkansas Commission

OUR Commission extends greetings and best wishes upon your 46th Annual Convention in Houston.

LEWIS M. ROBINSON
Chairman
Arkansas Public Service Commission

How Lone Star Gas Company Practices Safety and Makes It Pay Off

(Continued from page 45)

of Lone Star management to build its lines, plants, and facilities so that the best possible gas service may be given without creating hazards for the consumer, the public or our employees.

Importance of education

The finest engineered job in the world still requires the thinking and manipulative skill of people in order to make products or render service. The machinery will not move without people to set it in motion, and to keep the wheels turning smoothly.

The first step in education or training begins in the selection of the prospective employee. Our business is a complicated one, requiring a high level of intelligence and skill. It is imperative, therefore, to obtain the best possible employee-material available to us, otherwise our training efforts cannot produce the maximum results.

After a prospective employee has been tentatively selected, a medical examination is required to rule out, insofar as possible, the physical risk. A reference check is then made of 2 or 3 former employers, if he has had work experience. If the prospective employee has never worked, a check is made with his high school authorities to see what kind of a boy or girl he or she was while in school. The results of our program to check the "moral" risk have been most gratifying, which from an accident and claim standpoint alone, in many instances, is greater than the physical risk.

In the promotion of safety training, several different mediums of communicating our story are utilized. A rather complete accident and fire prevention manual is in the hands of each of our district managers, district foremen and plant superintendents. The manual contains some basic rules, but consists primarily of helpful information for use of our supervisory personnel to aid them in carrying out our safety program.

Safe-practice pamphlets have also been developed for the employees of 3 of our operations. At present, a safe-practices pamphlet for distribution department employees is being developed.

In addition to the manual and the employee safe-practices pamphlets, there is also in the hands of each supervisor a looseleaf binder (8½" × 11"), containing instructions on making the several reports required when an employee is injured; proper procedure to follow when a man is dog-bitten, the law on passing school busses and other state laws relating to motor vehicles, such as state inspection, financial responsibility, and outlines for safety meeting programs.

There is in the hands of each employee who drives a company vehicle, a safe-driver manual prepared by our State Department of Public Safety with a letter from our company's president on the inside of the flyleaf. This manual contains the state laws with which each driver needs to be familiar as well as suggestions for safe handling of vehicles under all kinds of conditions.

Our safety poster schedule furnishes a new poster every 2 weeks to our more than 200 safety bulletin boards. These posters are timed to the season and, as nearly as possible, selected to fit the particular operation.

Another means of safety education which has been found to be effective is the investigation of accidents, personal and auto, to ascertain primarily the causes and to find means of preventing a recurrence. Our safety engineers restaged some of the accidents and made photographs, from which slides are made and shown later to the group of employees involved as well as in some of our general safety meetings. A color slide of an accident, restaged, and especially if the accident victim is the chief actor, is very effective in bringing out the causes of accidents.

Three main types of safety meetings are used in our company:

1. General employee safety meetings.
2. Supervisors' safety meetings.
3. "Tail Board" or tool house meeting or huddle.

It is doubtful if anyone can say, with authority, which one of the 3 types of meetings is most effective. All 3, in our opinion, fill a definite need in our general safety program. In fact, it is our opinion that a program of accident prevention cannot produce the maximum results without all 3.

Our general employee safety meetings are held at regular intervals, some every 2 months and some quarterly, the frequency being determined by local conditions. The meetings are held on company time, usually at 8:00 A.M., 11:00 A.M., 1 P.M., or 4:00 P.M. They are limited to one hour.

The program outline is usually suggested by our safety division engineers who also furnish suggested program material. The material is timed to be appropriate. A July discussion of ice on the pavement would not be appropriate. Likewise, the hazard of heat exhaustion would not be a suitable subject in January. The programs are varied to maintain interest. Included in our suggested program material are reports of recent injuries to our employees and automobile accidents, with a request for discussion of ways and means for avoidance in the future.

Included on our programs will be first aid demonstrations to keep alive interest in and knowledge of first aid. Also, occasionally, a discussion and demonstration on fire fighting are included.

Many visual aids are used to stimulate and maintain interest in our meetings. A large number of very fine traffic safety sound movie films are available to industry. A number of these films have been used. Movie films on general safety, home safety and specific job safety are also used. Strip film and slides are available on a number of subjects in the field of safety and some of these have been used in our program.

Flip charts, magnet boards, and blackboards are useful in getting over ideas effectively which might otherwise be difficult to present. A mechanical man, developed by one of our safety engineers, has been used successfully to demonstrate correct lifting techniques, in our general safety meetings.

We should like, however, to call attention to the fact that the sound movie, flip charts, or any other type of visual aid must not be depended upon to do the safety program alone. They definitely will not.

They are, as properly named, aids only. Whatever the aid may be, its usefulness is limited. The program chairman or safety representative using the aid must plan his program so that the aid can be used to add emphasis to the point he is trying to get over and perhaps to spice up his program a bit.

Supervisors' meetings

Supervisors' meetings are called as the occasion requires.

In these meetings an attempt is made to impress upon the supervisor his responsibility for accident-prevention, within the sphere of his jurisdiction. That it is his responsibility to select and assign work so that each employee will be used where he can be the most effective and where he, the employee, can make the best possible showing for himself.

The supervisors also understand that it is their responsibility to train new employees correctly. That includes safety training.

Furthermore, that it is the supervisor's responsibility to require the right kind of performance on the part of each employee under his supervision.

In the supervisors' conferences, ideas, suggestions and criticisms of our program are invited, together with their opinions of how it can be improved.

These conferences not only serve to keep up the interest of the supervisors in the overall safety program; they also give him a more definite part in the overall planning of the program. Since he is held responsible for results, surely he should have something to say about the program.

The "Tail Board" or tool house huddle is held weekly, usually at 8:00 A.M., and usually lasts no longer than 10 or 15 minutes. Occasionally the subject for discussion will be general, such as safety around the local school, Red Cross or Community Chest campaigns. Generally the subject for discussion will be the job-at-hand and is usually more of a job-planning session. To indicate the importance attached to these meetings by local management, one of our plant superintendents, in a recent supervisory conference stated, "I would not want to operate a plant again without the aid of the weekly meeting."

Our business ship may be correctly engineered and our crew well trained but in order to have smooth sailing through both clear and stormy weather, there must also be the guiding hand of the captain, the supervisor.

It is the supervisor who must see that the machinery or facilities are maintained in safe operating condition at all times, that good housekeeping is maintained, that people are properly trained and assigned, that guards are kept in place, that personal protective equipment is used when needed, and that production is maintained at the most efficient level. He is the real key to a good safety program—my hat is off to him!

Our supervisors are carefully selected not only on the basis of their job knowledge but equally, if not more important, for their leadership ability or potential. Since 1944, our company has had a management improvement program, designed to give the supervisor the assistance that the modern supervisor needs to do his job successfully, and also to help him prepare himself for greater responsibilities. All our supervisors have received this program. This is a permanent program. When an employee is promoted to a position as supervisor, he is given this program at the earliest date thereafter.

What about results?

Now that our viewpoint on safety has been stated and a general outline of our program has been given, the question—what about results?

Our general safety program has resulted in better plant design and layout, better construction, and better housekeeping.

It has resulted in lower accident frequency and severity. For example our frequency of personal injuries since 1947 has been reduced more than 58%. The severity rate in 1953 was approximately 80% lower than in 1947.

One of our largest divisions completed 1,000,000 hours of operation without disabling injury early in January of this year. That record is still unbroken. This division *now* has more than 1,400,000 hours without a disabling injury.

As of January 1, 1954, one of our pipeline districts had completed 916,751 hours without a disabling injury, during 11 years of operation; another completed 746,700 hours during 23 years of operation. One compressor station completed 963,812 hours without lost-time injury during 25 years of operation. A number of units in our distribution divisions also have completed more than 500,000 hours without a lost-time injury.

There is also the financial saving in overall operations due to increased efficiency, but which is difficult to isolate on the books. However, in workman's compensation insurance, we can be specific: since 1938 credits or refund of premiums amounting to more than 25% of the total premiums paid have been received.

Furthermore, there has been a substantial reduction in our automobile accident rate. In 1949, our fleet of approximately 1,500 vehicles had a rate of one accident per 82,000 miles driven. In 1953, the rate was one accident per 130,000 miles, or a reduction in frequency of 36% during the 5-year period. This reduction has also resulted in a substantial saving in auto insurance cost, and in the costs of mechanical repairs to our vehicles.

While we are naturally quite pleased with the reduction in accident frequency and severity, both in personal injuries to our employees, in public injuries and accidents, and motor vehicle accidents, the result which means the most to us in Lone Star cannot be shown in either frequency, severity, or in dollars. That result—the prevention of needless misery, suffering and loss of life.

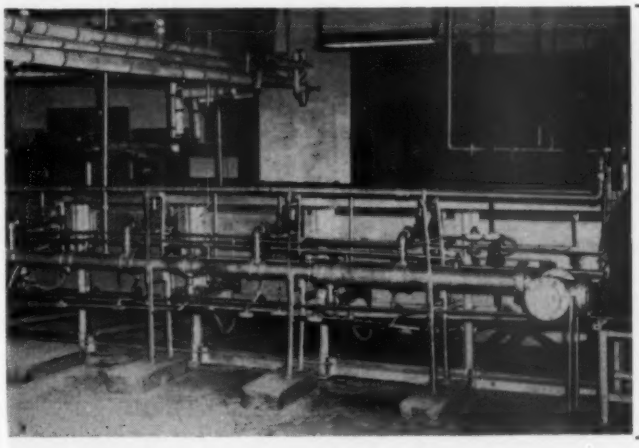
Selas Corp Builds Gulf Oil Furnaces

The Selas Corporation of America, heat processing and development engineers, has begun to build eight radiant-heat furnaces for the new Gulf Oil ethylene plant at Port Arthur, Tex., which Gulf spokesmen say will have the world's largest ethylene producing capacity, estimated at 7 billion cubic feet annually.

Stone and Webster's Badger Process Div., Boston, is building the refinery at Port Arthur, with Selas furnishing the critical heat units. These, engineers said, must produce temperatures up to 1,550 degrees while allowing for heat control along the hundreds of feet of tubing which carries the gas through the eight furnaces.

"Temperature differentials will be possible within any area of the Selas 'duradiant' furnaces through a multiplicity of individual radiant, gas-heated cavities within the ceramic walls," said Frederic O. Hess, Selas president.

"Each burner can be externally regulated to produce any desired temperature along the 'cracking' route," Mr. Hess explained. The absence of any open flame within the Selas radiant furnace enables the metal tubing carrying the gas to be located safely within two feet of the heat radiating walls. The eight radiant furnaces, each 40 by 33 by 8 feet, will be constructed at the Port Arthur plant site.



Use RED RAY burners
for Maximum Oven Efficiency

Increased production for smaller ovens. Combination of radiant heat and convection give greater results in less space.

Illustrated: Oven equipped with Red Ray Burners. Burners located above and below conveyor belt to heat both sides of material.

Red Ray Manufacturing Co., Inc.
455 W. 45th St. New York 36, N. Y.
Tel: Plaza 7-5174

Tampa Gas Co Installs Wrinkle to Improve Customer Service

(Continued from page 31)

In indexing this particular file, we departed somewhat from the orthodox system of sub-dividing the file with alphabetically labeled tabs in that we spelled out in full the surname, the given name and, or, the initials on the index tabs. Then too, a very attractive color combination which blends with the guides, dividers and the forms themselves was employed in making up the tabs. When a particular tab is pulled or leafed the card representing the name on that tab is the first one in the row and it is the first one to become visible. We are fast finding this method of index labeling has some definite advantages. Figure 3 intends to show the indexing scheme used in setting up this file so the ease and facility of reference is readily discernible and can be appreciated by the reader. This illustration confirms the statement made in the foregoing that reference and ledger balancing are both fast.

The card itself is easily prepared and posted. It is created initially for each customer at the time the first application for gas service is made and thereafter the card is kept in the active file until the customer permanently discontinues service and liquidates his final indebtedness. Should a customer leave our lines owing a balance, or should such balance due later be written off as uncollectible, this card is left active in the inactive ledger section until the balance is liquidated or the Statute of Limitations becomes effective. When a customer discontinues service and pays his bill in full, the card is removed from the active file. Presently, we are making no effort to revive the old card in the event a former customer, who owes us nothing, restores gas service.

At the time the card is initally created, the following data are procured and filled in on the back of the form:

1. customer's name exactly as it is to appear on monthly bill
2. the service address
3. whether owns or rents property
4. the mailing address
5. business or occupation and business address
6. name of the spouse
7. telephone number
8. the signature of applicant

After the applicant leaves the office, the form is placed in a typewriter with the data filled in by hand on the back of the card becoming visible to the typist, and the name and service location are typed in with extreme care given to neatness, alignment and correctness of the transcription. Subsequently, the remainder of the information on the card is filled in by hand.

Frequently this record is used for finding a customer's account number. This is always necessary when a customer wishes to pay his bill but does not bring the regular bill form with him. Also, it is true when a customer remits by mail but does not enclose the regular bill form. In both instances the account number is available almost instantly.

As already stated this card serves as the actual ledger sheet for the customers' service deposit. The design of this record is orthodox and the postings to it are made direct from the source documents themselves; i.e., the receipts, refund vouchers, etc.

This card also serves as the ledger sheet for the inactive customers' ledger. This particular ledger is set up and maintained as a separate and distinct unit of the master control and it may be further subdivided into units. It consists of:

1. the unpaid balances due for gas service from customers who have permanently disconnected and are no longer receiving gas service from our lines.
2. the accounts of former customers which have been written off as uncollectible during the previous three years, the period covered by the Statute of Limitations.

The alphabetical arrangement of the cards expedites the checking of orders for service from new customers to this record for the purpose of finding out whether the applicant currently owes an amount for previously used gas service or an amount representing either service or merchandise which has been written off previously as uncollectible. Should either of these conditions be true, the amount is either collected or satisfactory arrangements for its subsequent payment are required before gas service is connected.

Temporarily, we are continuing the former practice of checking the records to determine whether or not the applicant owes a balance after he leaves the office rather than while making application.

When a customer discontinues the use of gas service, the total amount owed for service, including the final bill, is transferred from the active ledger to this inactive ledger card and concurrently, the amount of the service deposit plus accrued interest is applied as a credit to the account and any balance due the customer is promptly refunded. Without relating all of the accounting gymnastics necessary to record the foregoing, let us remark that the posting procedure is both simple and fast. Moreover, the fact that the two ledger accounts are located one above the other makes it very easy to answer almost any question that might be asked about either the deposit or final amount owed by the customer. This is particularly true with respect to former customers who frequently request information about their account long after service has been discontinued. The fact that the desired information is always at our fingertips constitutes that extra effort and consideration that rings the bell with the customer.

One employee posts and maintains this record in its entirety, which means that this employee records the turn-ons, turn-offs and transfers from the orders, posts and balances both the customers' accounts receivable and deposit ledgers, and records the credit history.

The amount of any account that is found to be uncollectible and is written off as such must be in the inactive ledger when written off. Likewise, when an amount previously written off as uncollectible is paid or arrangements for its payment have been consummated, the account should be reinstated in the inactive ledger. This not only assures that a record of what has happened is perpetuated, but like the foregoing, it is a record that is easily referred to and always available for reference purpose.

The credit history section of this record was designed for recording and perpetuating facts and history about the particular customer's credit, including such pertinent items and experiences as:

a check returned because of insufficient funds.
a cut off for non-payment.
an unfavorable report from an outside credit agency.
a repossession or replevin of merchandise.
a merchandise or miscellaneous account written off as uncollectible.
amounts written off as uncollectible.

Admittedly, our credit history is confined to essentials; but why post data which serve no worthwhile purpose and are costly to perpetuate?

We render a final bill to permanently disconnected customers only. The actual form of final bill is in multiple parts and the procedure applicable to its use streamlines and simplifies the work required, speeds up service to the customer and gives him an intelligible final bill and statement showing the status of his account after the final bill is computed and the deposit is applied, with the various parts of this form serving as the accounting media for:

(a) applying a deposit and interest to a customer's account
(b) refunding an amount due a customer when the amount of the deposit exceeds the amount owed for gas service
(c) transferring a customer's account from an active ledger to the in-

active ledger after the total amount due the company is determined

(d) analyzing final bill revenue and preparing required revenue, statistical and tax analysis

(e) posting the customer's deposit and accounts receivable service ledgers and controls.

In posting orders covering permanent disconnects of service to this record, a line is drawn through the account number opposite the service address to indicate the customer no longer receives gas service. Obviously, this thereafter identifies any balance on this card, whether it be in accounts receivable or in deposits, as belonging to a disconnected customer. Thus, this simple method precludes the necessity for a complex or elaborate method of identifying inactive and unclaimed deposits.

Tampa, because of its favorable climatic location, enjoys a substantial tourist business and this causes us to process an excessive number of turn-on and turn-off orders. This abnormal volume in orders obviously increases the number of postings to the service location record and to both the customer deposit and inactive service account ledgers—in fact, it increases most phases of the paper work routines.

One of the finest things about this customers' history record is that it presents a composite and chronological history of the customer's period of service with us.

It enables us to process customer applications and orders in a hurry, and in so doing with such a complete record we can check those things which are protective to the company's best interest and do not in any way impair service to the customer.

The conversation and actual transcription of the data from the formerly used record to this card required a substantial amount of time, but it was a smooth, gradual process and it did not interfere noticeably with current routine. We attribute this ease in conversion to proper and considerate planning.

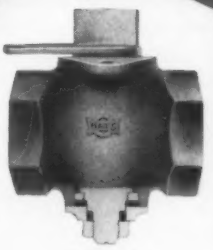
Today, almost three months after the change-over began, the new record is essentially complete. Our employees who use and work with it each day are well pleased with the results. It has enabled them to speed up handling the business of our customers both in the office and over the telephone. Compared with the system formerly in use, we have definitely salvaged an appreciable number of man hours, improved the system of internal control and effected some dollar savings by this installation.

For the information of the reader, this record is known as Visirecord. We believe this is the first installation of its kind in a public utility.

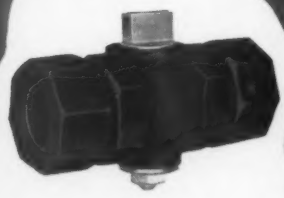
for STOPS that are TOPS

IT PAYS TO BUY HAYS

7405
Iron Body, Galvanized, Bronze Plug Stop



7490
"Key-Lok" Tamper Proof Stop Lockwing—Iron Body, Bronze Plug



7500
Threadless Gas Stop
Iron Body, Brass Plug

Service Line Stops—Meter Stops
Appliance Stops

Tamper Proof and Standard Patterns

Iron Body with Brass Plug
Black or Galvanized
Also All Brass Stops

Flat Head—Flat Head with Lockwing

Full Range of Sizes

Quality Assured . . .
By Precision Machining—
Individual Testing—
Rigid Inspection

Quality Proven . . .
By Supplying the Gas Industry
for Over 80 Years

Standard Packaging for Easy Handling, Space Saving Storage . . . Another HAYS First

Write for literature, or ask "The Man from Hays"

HAYS
GAS SERVICE PRODUCTS
HAYS MANUFACTURING CO.
ERIE, PA.

Natural Gas Programs Expand at Texas A & I College

(Continued from page 33)

search—Studies are being conducted on the performance of various types of connectors involving aluminum and copper material under varied conditions of current and outdoor exposure.

SGA course in gas technology

The short course in gas technology offered by the College and sponsored by SGA continues to be a popular means whereby gas engineers of the South assemble yearly to refresh themselves on recent developments in the production, conditioning and transmission of natural gas. Enrollment in the course is limited to about 200 representatives of SGA-member companies.

The registrations for the first eight years of the short course are:

1946	190
1947	154
1948	196
1949	185
1950	212
1951	213
1952	215
1953	253

The 9th annual short course in gas technology will be held at Texas A & I, June 2, 3 and 4, 1954. The enrollment fee includes lectures, dormitory accommodations, meals and a copy of the proceedings. The administrative committee with guidance from an advisory committee selects subjects of current national importance to be presented and obtains outstanding speakers for each subject chosen.

Leading experts in the field of production, conditioning, and transmission of natural gas conduct classes throughout the 3-day meeting, and in addition, inspection trips are arranged to the variety of industrial plants in the area. Other features include an inspection trip to the famed King Ranch and a Texas-style barbecue at the Humble camp on the Ranch. A bound volume of the papers delivered, records the yearly presentations.

The administrative committee for the course is composed of H. F. Steen, El Paso Natural Gas Company; R. C. Granberry, Jr., Humble Oil and Refining Company; Homer C. Givens, La Gloria Corporation; Paul L. Hughen, Texas Eastern Transmission Corporation; Roy Schuster, The Chicago Corporation; Raymond Crowe, Transcontinental Gas Pipe Line Corporation; and R. R. Suttle, managing director, SGA.

The Advisory Committee includes W. C. McGee, Jr., chairman, Tennessee Gas Transmission Company; L. C. Poindexter, United Gas Pipe Line Company; M. K. Sanders, Trunk Line Gas Company; C. L. Perkins, El Paso Natural Gas Company; Frank C. Smith, Houston Natural Gas Corporation; Clyde McGraw, Transcontinental Gas Pipe Line Corporation; John F. Lynch, La Gloria Corporation; Fred Fues, The Chicago Corporation; James Clement, King Ranch; Oliver N. Clark, Southern Natural Gas Company; Eli Cunningham, Texas Eastern Transmission Corporation; Thomas S. Bacon, Lone Star Gas Company; James E. Pew, Sun Oil Company; Al Bristow, Northern Natural Gas Company; Hudson D. Carmouche, Houston Pipe Line Company.

SGA management program

The SGA management development program offers to its gas company members a means of training middle-management personnel to do a better job in their respective positions. The course is designed to train individuals to become better managers by giving them a broader understanding of the fundamentals of management in the natural gas industry. Realizing the importance of this program to the industry and the many problems to be solved in its development and presentation, especially during the first year, SGA selected a committee of top management men to plan, design and supervise the first course which is to be held during the first two weeks in August, 1954.

The committee is made up of Curtis M. Smith, chairman, vice president, Tennessee Gas Transmission Company; Kenneth Fellows, secretary, Houston Natural Gas Corporation; Ray A. Metzke, division manager, United Gas Corporation; H. N. Oldham, vice president, Southern Union Gas Company; Tom Sterling, general manager, Oklahoma Natural Gas Company; R. R. Suttle, managing director, SGA; Don W. Weir, personnel manager, Arkansas-Louisiana Gas Company.

Working rapidly soon after receiving its assignment, the committee developed this curriculum:

A. Gas industry economics
   1. Private versus public ownership of gas utilities
   2. Regulation and legislation
      a. Local and state
      b. Federal
   3. Finance

B. Records and reports
   1. Necessity and importance of good records and reports
   2. Understanding the use of records and reports
      a. Budgetary control

C. Load building
   1. Gas versus electricity
   2. Sales promotion

D. Essentials of administration
   1. Fundamentals of management
      a. Leadership principles
      b. Functions of organization
      c. Planning and organization of work
      d. Communications
      Policies and procedures
   2. Employee relations
      a. Human relations
      b. Training and safety
   3. Public relations
      a. Customer relations
      b. Civic and community activities

All classes and evening seminars will be held in Texas A & I air-conditioned buildings. Weekday meals will be served in College dining facilities. Registrants will live in air-conditioned rooms. After the first week, registrants will rotate living quarters, to enable them to vary their personal association.

Two sections will be conducted—one for distribution employees, such as managers of town plants, superintendents; the other for transmission employees, such as station and pipeline superintendents. The enrollment will be limited to one registrant and an alternate for each section of the course from each member-company of SGA. Registration in the SGA management development program will be accepted on the payment of an enrollment fee of $325.00, for course, books, room and board. All registrants will be reviewed by an admission committee before official registration is granted. The total enrollment will be limited to 40, two sections of 20 each.

The course is so designed that a minimum of time is required away from the job. Mid-week trips, educational in nature, are planned to the King Ranch and the plant of Celanese Corporation of America at Bishop, Texas. During the weekend between the two weeks of study, a two-day trip is planned to inspect natural gas production, processing, transmission and utilization installations.

The broadened educational program at Texas A & I College now offers to the natural gas industry a means of training young men as undergraduates and graduates on the collegiate level as well as advanced refresher training for technical personnel and a management development program for training middle-management employees.

IRON SPONGE

for high efficiency gas purification at high pressures

Iron Sponge is your key to sulfur-free gas at minimum processing cost. Iron Sponge has high efficiency at low pressures or at today's high pressures and high temperatures. It absorbs *more* H_2S, gives long service between foulings, and is easily regenerated. Investigate it for your purification problem today!

CONNELLY, Inc.

3154 S. California Ave., Chicago 8, Illinois
Elizabeth, N. J. • Los Angeles, California

OXYGEN-GAS BURNER EQUIPMENT for TV TUBE MANUFACTURE

Oxygen-Gas Burner Equipment is used where the temperature, heat intensity or flame concentration obtainable with Air-Gas Equipment is insufficient to produce satisfactory results.

Various shapes of television and other electronic tubes are made with AGF Equipment. Also desirable for glass working, silver soldering, brazing, localized hardening, annealing, etc.

AGF Oxygen-Gas Burner Equipment has been approved by the New York City Board of Standards and Appeals Cat. No. 391-435A.

Write For Complete Burner Catalog

AMERICAN GAS FURNACE CO.
132 SPRING STREET, ELIZABETH 4, N. J.

Twin Appeal

BRINGS PROFITABLE SALES

Majestic DOUBLE-DUTY Gas Incinerator

Disposes of both TRASH and GARBAGE

MODEL 10-G

Pat. No. 1,985,962 others pending

It's easy to sell the extra convenience of modern home disposal methods, and this Majestic appliance provides a double punch for your sales story! Ends both the *garbage and trash* problems through efficient, *downdraft* incineration. Exclusive Majestic features and modern design assure profitable sales and complete customer satisfaction.

DIMENSIONS	20" wide, 24" deep, 36¼" high.
CAPACITY	Two bushels.
FLUE	Requires 7" smoke pipe outlet. May be used with any chimney flue 6" or larger.
BURNER	Monoport, 18,000 BTU rating.
PILOT	Automatic, 1500 BTU rating, dehydrates.
FINISH	Gleaming white enamel over rust-resisting Poly-Kote base.

A Gas Incinerator You Can Recommend With Confidence

—backed by a manufacturer of home incinerators since the 20's

The Majestic Co., Inc.

420-A Erie Street Huntington, Indiana

A Complete
MAIN
TREATMENT
SERVICE

Prepare for Natural Gas

GPM PRODUCTS

"FLUSHALL"
– Dust Removal
"SOLVALL"
– Liquid Phase Gum
"SEALALL"
– Joint Sealing
"WETALL"
– Dust Laying
"FOGALL H"
– Hot Fogging
"FOGALL C"
– Cold Fogging
"RUBBER CONDITIONER"
– Rejuvenating
Rubber Gaskets
"IRON HYDROXIDE"
– Purification

Discuss your problems with our engineers

★

GAS PURIFYING
MATERIALS CO.
3-15 26th Ave.,
Long Island City, N. Y.

Emphasis on Year-'Round Air Conditioning

(Continued from page 37)

homa has increased approximately 50% over a year ago and from all indications will increase about the same proportion in 1954. Packaged units of winter and summer air conditioning are appearing in more and more new homes, with considerable conversion in older homes.

TEXAS—by Wesley A. Fraser, Dallas —*Map Area K*

The high number of speculative houses built in comparison to custom-built owner-occupy houses. The percentage is much higher here than any other area I have come in contact with.

For the first time, in 1953, speculative houses in the $12,500-$15,000 category were put on the market with complete air-conditioning. Almost all houses over $25,000 were air-conditioned this year.

Iowa-Illinois G & E Elects Officers

C. P. Conrad was elected chairman of Iowa-Illinois Gas and Electric Co. and Charles H. Whitmore was named president at a recent meeting of the board of directors.

As chairman of the company, Mr. Conrad will continue as chief executive officer,

C. P. Conrad

Charles H. Whitmore

determining fundamental policies and exercising general control, subject to approval of the board of directors.

Mr. Whitmore, new president and former vice president and general counsel, will direct and manage the operation of utility staff services, except finance and accounting, in accordance with policies approved by the chairman and board of directors.

Ed Lerch, executive vice president and E. T. Williamson, vice president, were re-elected at the meeting, and new vice presidents elected are H. A. Kleinman and R. Hovey Tinsman, who is also to continue as treasurer.

Elect 2 at NJ Public Service E & G

The board of directors of Public Service Electric and Gas Co. (N. J.) has announced the election of Lyle McDonald as chairman of the board and Donald C. Luce as president, following the retirement of George H. Blake, president since 1945. Mr. Blake will continue to be a director.

Mr. McDonald, the new chairman, has been a vice-president since 1944 and a director and member of the executive committee of the board of directors since 1945.

Mr. Luce has been vice-president in charge of combined operations, a director and member of the executive committee of the board of directors since March, 1950.

Mueller Co Names 3 Sales Managers

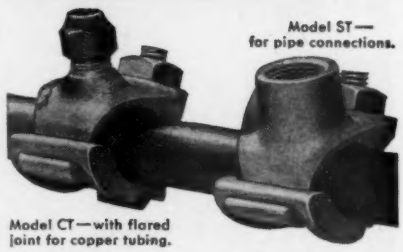
The Mueller Co. has announced the recent appointments of: A. D. Parks, as Southeast sales manager; D. R. Gannon, as Southwest sales manager, and W. R. Augustine, as Central sales manager.

Prior to this appointment, Mr. Parks traveled as Mueller representative in eastern Virginia, Maryland, Delaware, southern Pennsylvania and Washington, D. C. Mr. Gannon, who is returning to the company after several years' absence, was formerely located in the southwest as a representative. Mr. Augustine, before this appointment, was a representative in Michigan.

Elect Officers of Heath Consultants

At the recent annual meeting of the stockholders of Heath Survey Consultants, Inc., the following officers and directors were elected: Milton W. Heath, president and general manager; Elizabeth W. Heath, treasurer; Charles A. Heath, vice president and operations manager of the Western Div.; Rosina P. Burnham, assistant to the president; Stuart B. Eynon, operations manager of the Eastern Div. Directors elected were Milton W. Heath, Elizabeth W. Heath, David E. Place and Robert S. Kittredge.

Quick
easy way
to make gas connections
FOR LAUNDRIES, DRYERS,
REFRIGERATORS,
AND OTHERS

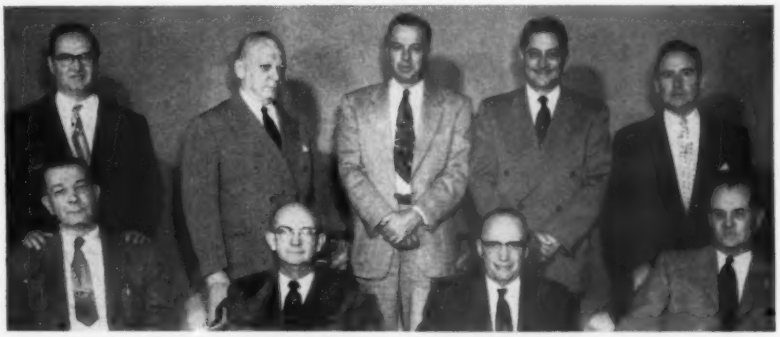


SKINNER-SEAL SADDLE TEE—for making gas and water connections. No pipe cutting or threading. Quick. Easy. Cuts costs. For gas refrigerators, home laundries, heaters, etc. Write for circular.

Approved by Underwriters' Laboratories, Inc.

M. B. SKINNER CO.
SOUTH BEND, 21, IND., U. S. A.

EXECUTIVE COMMITTEE: SOUTHWESTERN GAS MEASUREMENT SHORT COURSE



Sitting, left to right: E. C. McAninch, Oklahoma Natural Gas Co.; R. M. Scofield, Lone Star Gas Co.; W. H. Carson, University of Oklahoma; C. E. Terrell, Southern Natural Gas Co., Birmingham, Ala.
Standing, left to right: W. H. Woods, Runnels Gas Products Corp., Houston, Tex.; James L. Griffin, Northern Natural Gas Co., Omaha, Neb.; Ben F. Worley, United Gas Corp., Shreveport, La.; T. S. Whitis, Amarillo Oil Co.; and Pat H. Miller, Texas Eastern Transmission Corp. Not present in picture: C. A. Gibson, Cities Service Gas Co., Wichita, Kan.

Hold 29th Southwest Short Course

The 29th Southwestern Gas Measurement Short Course was held at the University of Oklahoma, Norman, Okla., April 13 to 15, George T. Naff, president, Texas Eastern Transmission Corp., made the principal address to the group.

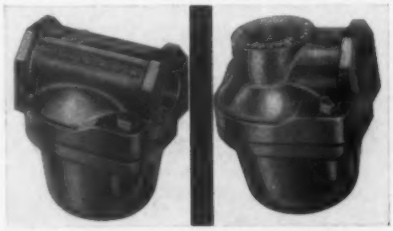
The Short Course was designed to provide an opportunity for individuals in the industry to study together the common problems pertaining to the measurement and regulation of gas so that each may become better qualified in the performance of his individual duties. The aim of the Course, through the cooperation of Oklahoma University, the various sponsoring associations and commissions, the natural gas and oil companies, and measuring and regulating equipment manufacturing companies, is to provide the means whereby the men in industry may get together, so that accurate and useful information regarding measurement and regulation problems may be presented and published for general benefit.

Presiding at the general assembly on April 13, was P. H. Miller, chairman of the general committee. W. H. Carson, Dean, College of Engineering, presented, "Aims and Operation of the Gas Measurement Short Course, and the address of welcome was given by Dr. G. L. Cross, president of the University. Following the principal address by Mr. Naff, K. R. Tibbets, chairman of the program committee, presented This Year's Program.

NEW EQUIPMENT

Dust trap

An all metal dust trap has been introduced by the manufacturer featuring a filtering element consisting of a porous bronze



casting. Each element is reportedly tested for controlled porosity, which will not change up to 15 psi differential pressure. The filter operates on the following principles: velocity; centrifugal force which will remove up to 70% of the dust; and the filtering element, which removes dust particles down to 10 microns in size. The units can be supplied in ¾" and 1" female pipe sizes and in straight or angle connections. The bowl and element can be removed for inspection or replacement without disturb-

NORWALK MANOMETERS

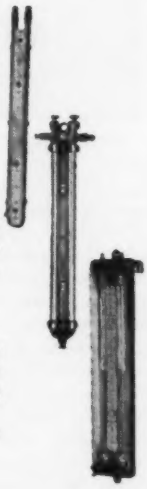
For Water
Glycerine
Mercury or Oil

Pressure, Vacuum or Differential Use

SERVICE TYPE
Toss 'em in the tool bag, drop 'em on the floor . . . they're unbreakable. Supplied with or without needle valves. Sizes from 6" to 18".

UNIVERSAL TYPE
Equipped with needle valves and hose connection. Convenient drain at bottom. Unbreakable tubing and sturdy frame. Sizes 6" to 36".

HEAVY DUTY
For permanent mounting . . . clear glass with or without red line. Easily filled. Fitted with ⅛" pipe thread. Sizes 12" to 50".



Send for Bulletin No. 3100M

NORWALK VALVE CO.
South Norwalk, Conn.

1897 1953

GOODMAN USED SINCE 1897 — "Z" HANDLE & LOCKING SLEEVE — GAS MAIN STOPPER

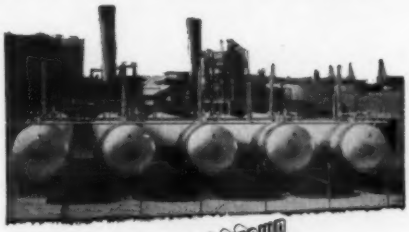
PIPE STOPPERS OF ALL KINDS

•

SAFETY GAS MAIN STOPPER COMPANY

523 Atlantic Ave.,
Brooklyn 17, N. Y.
Cable Address: GASTOPPER, N. Y.

NATURAL GAS STANDBY



BY DRAKETOWN

This packaged propane plant designed, engineered and built by Draketown, provides a completely interchangeable fuel for natural gas.

Draketown can design and build one for you, *within your budget,* to take over all or part of your load at the turn of a valve.

STANDBY
AUGMENTATION
100% TOWN OR PLANT SUPPLY

Serving utility and industry for over thirty years

DRAKE & TOWNSEND
INCORPORATED
Consulting • Design • Engineering • Construction
11 WEST 42ND STREET • NEW YORK 36, N. Y.

HAVE YOU BEEN "Ostrich-ized"?

Are you facing the facts? Do you take things for granted or just brush them off like this . . .

- "We have no leakage problem" . . . *Hundreds of Annual Heath Surveys give the answer.*
- "Our own forces take care of it very satisfactorily" . . . *Results of Heath Audits prove there's a difference.*
- "We have so much new construction, we have no time for such work" . . . *It costs less to remove the "Hazard" than to have a bad accident.*
- "We know where most of the leaks are, and an outside survey would only serve to pile up more leaks" . . . *A Heath Survey classifies leaks to set up an economical repair plan.*
- "And other arguments which refuse to face the facts" . . . *Trouble is the partner of "gas on the loose".*

We expect you may agree with us that all this is not "heads-up" thinking. Gas Leakage is a serious problem, and rates a careful accounting.

HAVE HEATH "AUDIT" YOUR GAS LEAKAGE SITUATION and GIVE YOU a COMPLETE REPORT

For complete information, Today WRITE, WIRE or PHONE...

HEATH

SURVEY CONSULTANTS, INC.

572 Washington Street
Wellesley 81, Mass.

Midwest Office — Richmond, Mich.

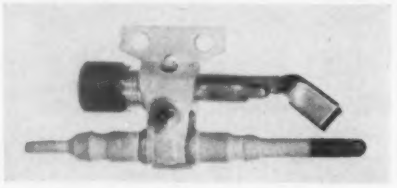
YOU CAN'T SELL GAS THAT LEAKED OUT

ing the piping, the company reports. For operating pressures up to 150 psi. The 1" units can be supplied with insulating bushings for cathodic protection.

All Metal Dust Trap. Sprague Meter Co., Bridgeport 4, Conn.

Pilot

Called the target pilot, this new pilot, introduced by the manufacturer for use in gas operated appliances, reportedly was developed to overcome the susceptibility of pilots to linting and clogging at the primary air intake. According to the company, the new pilot does away with such air intakes and will maintain a steady blue flame for proper safety control operation. Fabricated from stainless steel, its construction is said to resist corrosion.



Target Pilot No. 2B. Robertshaw-Fulton Controls Co., Thermostat Div., Youngwood, Pa.

NEW BULLETINS

HONEYWELL INDUSTRIAL CONTROL MOTORS AND MOTORIZED VALVES. The company's complete line of industrial control motors and industrial motorized valves is covered in this new bulletin. Included are specifications, ordering information, and a price supplement for the motors. The bulletin also contains information and specifications for the use of industrial control motors with globe, adjustable port, butterfly valves, or combinations. Many charts, tables and illustrations are included.

Bulletin Catalog 8203. Pp. 16. Minneapolis-Honeywell Regulator Co., Wayne and Windrim Avenues, Philadelphia 44, Pa.

DUAL FUEL ENGINES. Photographic examples of various applications of the manufacturer's engines are presented in this new bulletin, together with vital statistics, case histories and comments on fuel consumption. Space is devoted in the bulletin to each of the following features: the dual plunger fuel injection pump; the automatic fuel switcher for changing from gas to oil; automatic thermal air control; and the micrometering gas valve which controls fuel gas supply to individual power cylinders. The bulletin is generously illustrated with photographs of installations, and contains cross-section photographs showing construction features.

Bulletin S-too-B57. Pp. 36. Worthington Corp., Harrison, N. J.

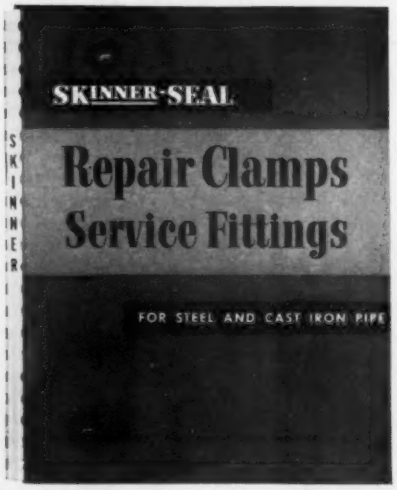
FOXBORO DIAL THERMOMETERS. Describing the manufacturer's dial thermometers for long distance measurement, this new bulletin emphasizes the variety of ranges, and the bulbs, tubing and accessories available and provides complete data on temperature indicators of the vapor pressure and gas pressure types. A separate section gives details of construction, helpful in understanding the performance of the instrument. Both centigrade and Fahrenheit ranges are listed for class II and III systems, vapor pressure and gas pressure. Fahrenheit ranges cover all frequently-used scales from —300° to plus 600° in class II and from —250° to plus 1,000° in class III.

Bulletin 467. Pp. 16. The Foxboro Co., Foxboro, Mass.

MINNEAPOLIS HONEYWELL AIR-O-MOTOR OPERATORS. The air-o-motor operators described in this new bulletin, of the spring and springless types, are essentially mechanisms for transforming air signals into mechanical motion or force. The bulletin reports that positioning by these operators is governed by changes in air pressure transmitted to them by sources of controlled air such as pneumatic controlling instruments or manual loading stations. The bulletin contains photographs of the units and presents schematic installation drawings. Specifications, operating characteristics, and a group of informative tables are included in the bulletin.

Bulletin 414-1. Pp. 8. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Avenues, Philadelphia 44.

SKINNER-SEAL REPAIR CLAMPS AND SERVICE FITTINGS. This new catalog presents a complete description of the manufacturer's line of repair clamps and service fittings



for steel and cast iron pipe. A hard-cover bulletin, generously illustrated, it is presented in multi-color and offers all of the necessary information about the construction, operation and installation of the various units. The bulletin contains pictures and descriptive information including specifications about: bell joint; split coupling; emergency pipe; pipe line; pipe joint; collar leak; high pressure weld; vented plug; pressed steel economy; and adjustable chain clamps; safety vent patch; welding patch; service saddle; non-shift service saddle; coupling saddle; wall service fitting; safety plug check; safety check; bull-nick street tee; welding tube; forged welding and saddle tees. Also, there are sections of the bulletin devoted to drilling devices, cutters and adapters, special fabricated clamps and the company's valve and bibb reseater.

Bulletin Catalog No. GW. Pp. 48. M. B. Skinner Co., South Bend 21, Ind.

ECLIPSE PILOTED ENTRAINMENT BURNERS. This new bulletin covers the manufacturer's series of entrainment burners and offers complete information concerning construction and specifications, including diagrams and charts. The burners are suitable for a wide variety of heavy duty applications including forging, heat-treating, boiler firing and other industrial uses.

Bulletin H-64. Pp. 4. Eclipse Fuel Engineering Co., Rockford, Ill.

AMERICAN DOUBLE-X MECHANICAL JOINT. This new bulletin on the manufacturer's mechanical joint cutting-in sleeve describes the installation of the unit when it is necessary to install a fitting into an existing pipeline for gas service. The bulletin reports that the versatile fitting is also used for setting valves into existing mains.

Bulletin American Double-X Mechanical Joint. American Cast Iron Pipe Co., Birmingham 2, Ala.

Post-War Adjustment Period Almost Ended

(Continued from page 44)

number of industries (i.e., the ratio of operating expenses to gross receipts) stemming chiefly from an extremely heavy burden of wages and taxes.

Industrial research alone cost an estimated $1,500 million in 1953, and the Federal Government on its own part spent a still greater sum for the purpose.

Only by increasing the output per man and machine, and by further developing the market for its products, can the individual businesses hope to prosper, or at least hold their own in the increasingly competitive period ahead. The markets promise to be available, paced by rapid population growth, but they must be developed.

While the corporate need for new money will be lower this year than in 1953, indigestion has developed in the market for bonds and preferred stocks as underwriting firms have bid ahead of the market in an effort to obtain their share of the new issues, only to find that the market has ceased its uptrend momentarily for a breather. These underwriters now have on their shelves a fairly good-sized inventory of unsold bond and preferred stock issues, just at a time when a new wave of offerings is scheduled to come on the market for new money and refunding purposes.

Institutional investors have a plentitude of investment money which they wish to put to work. But in the present backlog of unsold issues and in the new ones coming to market their fund managers see an opportunity to better their yield return merely by adopting a wait and see attitude. In this respect they have the investment underwriting firms over somewhat of a barrel, at least for the moment.

As matters stand now, state and local governments seem to be the only major group of borrowers which promise to equal or exceed in 1954 the total of security offerings which they brought to market last year. But even if they should attain a new record in this respect, any gain on this score is not expected to offset more than a fraction of the decline anticipated in corporate demand for investment funds this year.

How soon the pressure of idle funds building up in the hands of institutional investors may cause them to drop their wait and see attitude and actively go after new corporate offerings is conjectural; but all known and indicated factors in the economic picture point to maintenance during 1954 of a low level of bond yields in relation to that which prevailed in 1953. Stability is expected to be a prime factor in the corporate bond market.

Given this development, and a normal spread of yields between bonds, preferred and common stocks, the two types of stock investment media also should afford utility managements additional sound vehicles through which to raise whatever funds they may find themselves in need of during the months ahead.

How **automatic controls** *and* **heating and air conditioning equipment** *work together for best results*

AUTOMATIC CONTROL of HEATING and AIR CONDITIONING

By JOHN E. HAINES

Vice-President
Minneapolis-Honeywell Regulator Company
354 pages, 6 x 9, 200 illustrations, $6.75

COVERS . . .
Electric-control
Pneumatic-control

AND CONTROL OF
Domestic heating
Unit heaters and unit ventilators
Commercial central-fan heating systems
Commercial central-fan cooling systems
Commercial refrigeration
Radiant-panel heating

Just Published!

AMERICAN GAS JOURNAL
205 East 42 Street
New York 17, N. Y.

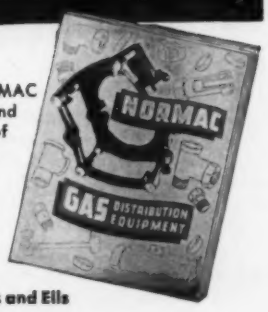
NORMAC

Couplings, Sleeves and Fittings . . .

- Save Time
- Handle Easily
- Give Dependable Service

Because They Offer...

- Maximum Deflection
- Ease of "Stabbing"
- Complete Confinement of Rubber



Today, write for your free copy of this NORMAC catalog . . . complete with illustrations and specifications on the entire Normac Line of Couplings, Sleeves and Fittings. It's a profitable step in the cost-cutting direction.

NORTON-McMURRAY MFG. CO.
122 South Michigan Ave., Chicago 3

Couplings • Meter Bars • Sleeves
Cocks • Ball Joint Clamps • Service Tees and Ells

FEDERAL POWER COMMISSION

Kuykendall Issues Statement on Hinshaw Amendment

Chairman Jerome K. Kuykendall announced today that Federal Power Commission has under consideration a proposed rule to make effective the exemptions granted by the Hinshaw Amendment (H. R. 5976, 83d Congress), recently passed by Congress and approved by the President.

"Under this amendment" the Chairman said, "a new subsection (c) is added to Section I of the Natural Gas Act. The new subsection provides that any company which purchases natural gas at or within a state boundary is exempted from the provisions of the Act if all of the gas so purchased is consumed within that State and the rates, service and facilities are regulated by a State commission.

"The Commission is requiring a minimum of information in order to make these exemptions effective. Since no exemptions can be allowed unless the appropriate State commission certifies that it has jurisdiction which it is exercising over the rates, service and facilities of the applicant company, the Commission is requiring each company applying for the exemption to submit the minimum amount of information which will enable the State commissions to make the necessary examination and to file the certificates when appropriate. By assisting State commissions in this manner, uniformity will be obtained and the work of the State commissions reduced to bare minimum."

Operating Revenues and Income—December 1953

Operating revenues of natural gas companies reporting to the Commission, just released, totaled $253,678,449 in December 1953, an increase of 13.5% over December 1952. For the 12 months ended December 31, 1953, revenues aggregated $2,330,308,445 or 19.2% higher than in the 12 months ended December 31, 1952.

Gas utility operating income for December 1953 amounted to $44,516,027, up 22.1% from December 1952. For the 12 months ended December 1953 gas utility operating income was $325,933,895, representing an increase of 13.1% over the comparable period in 1952.

Net gas utility plant of the reporting companies aggregated $5,534,773,391 on December 31, 1953, up $543,712,654, or 10.9% over a year earlier.

Gas operating revenue deductions during December 1953 amounted to $209,322,236, an increase of 11.8%. Of this total, operating expenses accounted for $170,068,402; depreciation for $17,070,789, and taxes for $22,183,045.

Gas sales to ultimate consumers during the month were 275,790 MMcf, an increase of 5.5% over December 1952.

Sales to residential consumers decreased 1.6%, while those to commercial and industrial consumers increased 1.0%, and 10.7% respectively. Revenues from the three classes of service increased 5.7%, 8.1% and 11.5%, respectively. Revenues from all sales to ultimate consumers increased 7.8% and amounted to $111,125,829.

Net income of the companies for December 1953 was $35,276,287, up 20.4% from the December 1952 net. For the 12 months ended December 1953, net income of $232,985,943 represented an increase of 9.6% over the comparable period in 1952.

26 Rate Cases with $115,648,600 in Increases Handled by FPC During 9 Months

The Commission disposed of a total of 26 natural gas rate cases involving $115,648,600 in proposed wholesale increases during the 9-month period ended March 31, which is more than the combined total—both dollarwise and in number of cases—of the two preceding fiscal years, Chairman Jerome K. Kuykendall reported.

The Commission still had pending 38 rate cases involving about $103,608,000 in increases—on an annual basis—at the end of March. Nine months earlier there were 39 cases pending, involving $162,730,000 in proposed increases. Another $56,526,000, representing 25 cases, had been suspended by FPC through March 31—making a total of $219,256,000 before the Commission during this 9-month period.

Out of the total of $115,648,600 in proposed increases disposed of during the first 9 months of the current fiscal year, the Commission disallowed $31,490,500, or 27.2%. Of the remaining amount, $81,990,100 was allowed and $2,168,000 was withdrawn as a result of settlements in related cases.

Northern Natural's Proposed Increase in System Capacity Okayed

The Commission has authorized Northern Natural Gas Co. to complete a proposed expansion of its pipeline system, already started, to enable it to deliver additional gas to existing customers and to supply several new customers in the Midwest, commencing next Winter.

The newly-authorized facilities include approximately 204 miles of main line pipe and 22,800 horsepower in main line compressor additions. The cost is estimated at $23,776,000. Additional branch lines authorized for new service will cost an estimated $14,689,057.

The project is the final phase of an expansion program which will increase Northern's total system capacity by approximately 300 MMcf daily. The additional gas is being received in Texas from Permian Basin Pipeline Company.

The overall project, as now approved, will increase the sales capacity of Northern's system by a total of about 278,680 Mcf per day.

Northern had proposed to allocate 46,927 Mcf to existing customers, including its Peoples division which serves communities in Nebraska, Iowa and Minnesota. The remaining 68 million cubic feet was proposed to be allocated to new customers.

The Commission, however, allocated 70,101 Mcf to new customers; 6,272 Mcf to Northern's Peoples Division; and 38,554 Mcf to existing customers. The gas allocated to the new customers ultimately will be distributed in more than 60 communities in Nebraska, South Dakota, Iowa and Minnesota.

The Commission refused to include a request by Iowa Public Service Company for 1,200 Mcf of firm gas to be used as industrial fuel in a manufacturing plant in Waterloo, Iowa, and thus cut that company's request from 28,199 Mcf. The Key City Gas Company's request for 11,603 Mcf per day to serve Dubuque, Iowa, was found to be excessive, and allocation was reduced to 10 MMcf.

Southern Natural Gets Compromise Rate Rise

The Commission has approved a settlement of a rate proceeding involving Southern Natural Gas Co., reducing the amount of a requested wholesale natural gas rate increase by approximately $956,000 per year.

The rates proposed by the company would have resulted in an increase of about $5,956,000 for the year ending April 30, 1953, while those contained in the settlement allow an increase of approximately $5,000,000, based on the same 12-month period. Southern's proposed increase has been in effect under bond, subject to refund, since last September 2. Thus, the company will be required to refund to its customers the difference between revenues computed at the rates in effect under bond and at the settlement rates approved by the Commission. Such refund totals approximately $624,493 exclusive of interest.

The settlement was agreed to by parties to the proceeding following a series of conferences. The settlement provides for an increase of 3.354¢ per Mcf, compared with the 4¢ per Mcf increase in commodity charges for resale rate schedules proposed by Southern. Southern's proposal was based on a 6½% rate of return. The studies submitted by the staff of the Commission and by the Georgia Public Service Commission were based on a 6% rate of return.

FPC Issues New Pipeline Map

The Commission has issued a map of "Major Natural Gas Pipe Lines" in the United States as of December 31, 1953.

The map, which is approximately 13" by 19", is printed in four colors on a scale of 165 miles per inch. The map shows major existing pipelines, those which are under construction or have been authorized but not yet started, and proposed lines which are pending before the Commission.

Each pipe line is numbered to refer to an index of operating companies appearing at the bottom of the map. Existing or proposed pipeline systems of 115 companies appear on the map. The map also shows gas fields, indicating both the major sources and generalized areas of natural gas supply.

The new map may be purchased from the Publications Division, Federal Power Commission, Washington 25, D. C. The price is 25 cents per copy and the order number is FPC M-39.

Extent of Utility Liabilities in Law of Attractive Nuisance

(Continued from page 46)

Notwithstanding this argument the higher court held that the installation by the gas company of hot water tanks and gas heaters did constitute "plumbing" within the meaning of the licensing statute.

Property owner installations

A reader asked this question: "Under what circumstances may a gas company avoid liability for damage to pipes or equipment installed by the owner of private property? Our company is located in a town of 2,500 population and we have such a suit to defend. Here the property owner installed some heaters which failed to properly function after our employee had adjusted them according to the manufacturer's instructions."

Modern courts consistently hold that any and all appliances installed by a gas company and connected with its pipes puts the gas company at a legal disadvantage. See Pennsylvania v. Chamberlain, 288 U.S. 333; Lowden v. Friddle, 189 Okla. 414; Parker v. Gulf, 6 Cir., 80 F. (2d) 795; Mark C. Walker, 6 Cir., 124 F. (2d) 420; and Troutman v. Mutual, 6 Cir., 125 F. (2d) 769.

But the law is different with respect to gas equipment which was not installed by the gas company.

In Brown v. St. Louis County Gas Company, Mo. App., 131 S. W. (2d) 354, it was shown that a property owner sued a gas company to recover damages caused by freezing and bursting of pipes and radiators of a hot water heating system while the property owner was absent from home. The freezing damage occurred when the supply of gas to the burner in the basement became entirely shut off when the mechanical equipment which controlled the intake of gas failed to function as it was designed to do. The property owner testified that a gas company employee had advised him not to drain the water system to prevent freezing and one of the company's employees adjusted the apparatus necessary to maintain a temperature of 50°F in the house while the family was away. There was evidence that during the absence of the property owner the mechanical equipment permitted the flow of gas for several days, but finally failed to function and as a result prevented a sufficient supply of gas to the heater. There was a freeze-up and heavy damage resulted.

The property owner did not prove that the gas company employees furnished or installed the mechanical equipment, or had any responsibility whatever for its proper functioning, or that it had any notice that such equipment would not function properly. Moreover, the equipment, the gas pipes, and all other appliances in the house were installed by, and were at all times under the complete control of, the owner. Therefore, the court held the gas company not liable in damages to the property owner. Also, see Gibbs v. General Motors Corp., 350 Mo. 431; Taylor v. Missouri Natural Gas Company, 67 S. W. (2d) 107; Streck v. St. Louis Gas Company, 58 S. W. (2d) 487; Nomath Hotel Company v. Kansas City Gas Company, 223 S. W. 975; Bonner v. Texas Company, 5 Cir., 89 F. (2d) 291; and Schaum v. Equitable Gas Light Company, 44 N.Y.S. 284.

For comparison, see Allen v. Temple, 179 S. W. (2d) 116. The building was supplied by natural gas for heating. The gas was conveyed through a number of pipes to various parts of the building where heat was required. One of these pipes, which originally had been a water pipe, extended to a wash basin, where it was attached to what had formerly been a hot water faucet. There was a water stop-and-waste valve on this pipe near where it went through the ceiling.

One day the gas company received a call reporting a gas leak at the building. The call was reported to the superintendent of the gas company, who sent a man named McKinney to see about the leak. Later, McKinney returned and reported that there was a leak in the basement around the above mentioned stop-and-waste cock, and that he had fixed it or stopped the leak.

Exactly one week later a person named Allen, while near the basin, struck a match to light a cigarette. A terrific explosion of gas immediately followed. Allen was severely injured and sued to recover heavy damages.

Negligence must be shown

From these above facts it is quite apparent that the gas company would be liable if the explosion was caused by negligence of McKinney who made the repairs on the stop-and-waste valve. If, however, the negligence could be traced to either the property owner or Allen, or some other person who may have tampered with the stop-and-waste valve after McKinney had reported to the gas company superintendent that he had fixed the leak, the gas company would be relieved from liability.

During the trial, testimony showed that after McKinney had stopped the leak, the property owner had hired a plumber to check and repair the stop-and-waste valve. Further testimony revealed that the stop-and-waste valve had been removed after McKinney's visit to the premises, and a short piece of pipe had been inserted in its place. The effect of its removal was to permit an uninterrupted flow of gas through the pipe to the hot water faucet. This testimony was presented to the jury which decided that since the property owner had employed a plumber to do work in the building, including repair of the stop-and-waste valve, the gas company could not be responsible for the explosion. The jury relieved the gas company from liability and held the property owner fully liable for the injuries sustained by Allen.

The property owner appealed to a higher court and he contended that there was no substantial evidence to support the verdict against him. After carefully reviewing all of the testimony the higher court upheld the verdict rendered by the jury, and said:

"The negligence relied upon was the removal of the stop-and-waste valve in the gas pipe and the insertion, in lieu thereof, of a short length of pipe, so that gas was caused to flow through said pipe and to escape. . . . The evidence further shows that the superintendent of the gas company notified defendant's (property owner) secretary that there was a gas leak in the building, and that said secretary informed him that a plumber was working in the building at the time and that he would have the plumber check and repair the leak."

No proof is given

Another reader asked this question: "If a gas company's employee is accused of damaging property or doing some other illegal act while reading meters inside a home, what proof is necessary to hold the gas company liable?"

While, under certain circumstances, a gas company may be held liable for damages to private property caused by negligence of a meter reader, yet it is generally conceded by the courts that convincing evidence must be introduced by the complaining party that the gas company's meter reader actually caused the damage.

For instance, in a recent case a property owner sued a gas company contending that the latter's employee, who entered the basement to read a meter, was smoking a cigarette and set fire to the house, However, since no evidence was introduced proving beyond a reasonable doubt that the employee actually set fire to the building, the court held the company not liable.

Also, see Minnehema Gas Company v. Johnson, 282 Pac. 303. In this case a property owner sued a gas company contending that his property adjoining the gas company's plant was set on fire and destroyed by sparks originating from the plant's smoke stack.

However, since the property owner failed to introduce witnesses who actually saw the sparks which came from the gas company's plant start the fire, the court held the gas company not liable.

GAS INDUSTRY CALENDAR

May

9-12 LPGA Annual Convention, Conrad Hilton Hotel, Chicago.
10 (week) 35th Annual National Restaurant Convention and Exposition, Navy Pier, Chicago.
10 (week) AGA commercial gas school, Chicago.
17-18 AGA Industrial and Commercial Gas Section, managing committee, The New Ocean House, Swampscott, Mass.
19-21 GAMA annual meeting, The Drake, Chicago.
24-26 AGA Production and Chemical Conference, Wm. Penn Hotel, Pittsburgh.
27-28 Natural Gas and Petroleum Association of Canada, Prince Edward Hotel, Windsor, Ontario, Canada.

June

2-3 AGA research and utilization conference, Hotel Statler, Cleveland.
20-24 Canadian Gas Association, Banff Springs Hotel, Banff, Alberta, Canada.
21-22 AGA residential gas section, New York-New Jersey regional gas sales conference, Monmouth Hotel, Spring Lake, N. J.
27-29 Wisconsin Utilities Association, accounting section annual convention, Dell View Hotel, Lake Delton, Milwaukee, Wis.
28-29 Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

July

12-16 National housewares and home appliance exhibits, Auditorium, Atlantic City, N. J.
19-23 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

September

8-10 Pacific Coast Gas Association, Vancouver and Georgia Hotels, Vancouver, British Columbia.
8-10 Mid-West gas school and conference, Iowa State College, Ames, Iowa.
8-11 AGA operating section, organization meetings, Hotel New Yorker, New York.
13-14 Independent Natural Gas Association of America, annual meeting, Roosevelt Hotel, New Orleans, La.
28-29 Texas Mid-Continent Oil and Gas Association, Baker Hotel, Dallas.

October

11-13 AGA annual convention, Atlantic City, N. J.
18-22 National Safety Council, Chicago.

November

1-5 National Metal Exposition, Chicago.
8-11 American Petroleum Institute, Conrad Hilton Hotel, Chicago.
17-19 Wisconsin Utilities Association, gas and electric sections convention, Schroeder Hotel, Milwaukee, Wis.
28-December 3 The American Society of Mechanical Engineers, Statler Hotel, New York.

December

6-7 SGA advisory council and management conference, Point Clear, Ala.

February, 1955

7-11 Western winter radio-television and appliance market, Western Merchandise Mart, San Francisco.

March, 1955

24-25 AGA gas supply, transmission and storage conference, Wm. Penn Hotel, Pittsburgh.

April, 1955

12-14 AGA sales conference on Industrial and commercial gas, Hotel Statler, Boston, Mass.
19-21 Southwestern gas measurement short course, University of Oklahoma, Norman, Okla.
25-27 Mid-West regional gas sales conference, Edgewater Beach Hotel, Chicago.

May, 1955

9-13 National restaurant exposition, Navy Pier, Chicago.
16-18 Southern Gas Association, New Orleans, La.
23-25 GAMA annual meeting, Ambassador Hotel, Los Angeles.

June, 1955

5-9 Canadian Gas Association, annual meeting, General Brock Hotel, Niagara Falls, Ontario, Canada.
9-10 Natural Gas and Petroleum Association of Canada, Royal Connaught Hotel, Hamilton, Ontario, Canada.

July, 1955

18-22 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

PROFESSIONAL DIRECTORY

RICHARD W. STAFFORD
CONSULTING GAS ENGINEER
2944 Grant Street, Evanston, Illinois — Phone SUnnyside 4-0822

COAL AND COKE HANDLING
Complete engineering and installation service for coal and coke handling, screening, crushing, skip hoists and storage bins, including alterations to existing conveying and screening plants.
ROBINS ENGINEERS DIVISION
HEWITT-ROBINS INCORPORATED
157 Chambers Street — New York 7, N.Y.

Let Us Install Your **LP GAS PLANT**
Owners of over 80 PEACOCK PLANTS know:
"There's no substitute for experience"
PEACOCK CORPORATION
Box 268, Westfield, N. J. — Westfield 2-6258

DRAKETOWN ® PROPANE PLANTS
★ *Standby*
★ *Augmentation*
★ *100% Town Supply*
Design · Engineering · Construction
DRAKE & TOWNSEND INCORPORATED — 11 WEST 42ND STREET, NEW YORK 36, N. Y.

CHARLES R. BELLAMY
NATURAL GAS—MANUFACTURED GAS
AND MIXED GAS PROBLEMS
44 Prospect Ave. — Montclair, N. J.
Phone—Montclair 2-3692

"YEARS OF EXPERIENCE IN ONE PACKAGE"
complete LP-gas plants
engineered • designed • installed
H. Emerson Thomas & Associates, Inc.
P. O. BOX 270 WESTFIELD, N. J. WE 2-2800

Engineers, Designers and Manufacturers of
LP-GAS STAND-BY PLANTS
and special equipment for every requirement
AIGAS
TELEPHONE TRINITY 0845
AMERICAN LIQUID GAS CORPORATION
1109 Santa Fe Avenue • Los Angeles 21, California